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The purpose of this paper is to investigate the process of coordination reduction in various languages and to propose a universal set of rules that will account for all types of coordination reduction. In a brief discussion of some of the more recent proposals on coordination reduction it will be shown that these proposals fail to account for the data in a principled way, mostly because they assume the directionality constraint. It will be argued that coordination reduction consist of a deletion rule that only operates forward, and of a regrouping rule that functions to restore the scope relations within the reduced sentence. Finally, it will be suggested that many of the constraints on deletion and regrouping can be accounted for if we assume the principle of scope. (Author)

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COORDINATION REDUCTION

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ABSTRACT

The purpose of this paper is to investigate the process of coordination reduction in various languages[1] and to propose a universal set of rules that will account for all types of coordination reduction. In a brief discussion of some of the more recent proposals on coordination reduction it will be shown that these proposals fail to account for the data in a principled way, mostly because they assume the directionality constraint. It will be argued that coordination reduction consist of a deletion rule that only operates forward, and of a regrouping rule that functions to restore the scope relations within the reduced sentence. Finally, it will be suggested that many of the constraints on deletion and regrouping can be accounted for if we assume the principle of scope.

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1. The rule component

1.1 The deletion rule

The subject of coordination reduction has been extensively discussed in recent linguistic writings. Nevertheless, many relevant questions still remain unanswered, and this paper is an attempt to answer at least some of them. Before presenting and justifying my own proposal, I will briefly discuss three analyses of coordination reduction, namely those of J. Ross, A. Koutsoudas, and G. Sanders. These three analyses were chosen because the coordination reduction processes proposed in them are assumed to be universal. Ross (1967a, 1967b) argued that two rules are needed to reduce coordinate structures, namely a rule -- called 'gapping' -- which applies to verbs only, and a conjunction reduction rule that applies to other kinds of constituents. Ross had observed that "the order in which Gapping operates depends on the order of elements at the time that the rule applies; if the identical elements are on left branches, Gapping operates forward; if they are on right branches, it operates backward" (1967b: 5). This dependency of the direction of deletion on the branching structure of the identical constituents has been called the directionality constraint. Right or left branching also plays a role in Ross' conjunction reduction rule which Chomsky-adjoins "to the right or left of the coordinate node a copy of some constituent which occurs in all conjuncts on a right or left branch, respectively, and then deletes the original nodes." (1967a: 175). According to Ross, therefore, the deletion of verbs differs from the deletion of other constituent types and consequently two different rules are needed. Ross' position was first attacked by G. Sanders (1970), who claimed that not only verbal reductions but all other reductions as well are subject to the directionality condition, and that consequently there is no need for two reduction rules.

Sanders' claim that all instances of coordinate reduction can be accounted for by one single reduction rule was substantiated by Koutsoudas (1971), who proposed the following coordination reduction rule:

"Coordination Deletion (Optional)

Given a coordination in which each conjunct includes a constituent which is identical to the corresponding constituent of each other conjunct, all but one of the identical constituents may be deleted, the undeleted constituent being that of the first conjunct if it is a left-branching constituent, and that of the last conjunct if it is a right-branching constituent." (p. 347)

In other words, if the identical constituents are on right branches, deletion operates backward, if they are on left branches, it operates forward. An example of both forward and backward reduction is provided by verbal deletion in ENGLISH. In sentences with intransitive verbs, the verbs are on right branches and deletion operates backward, e.g. (1).

(1) a. John laughed and Mary laughed.

b. John and Mary laughed.

In sentences with transitive verbs, on the other hand, the verbs are on left branches and deletion operates forward, e.g. (2).

(2) a. John bought a book and Mary bought a magazine.

b. John bought a book and Mary a magazine.

Ross' and Koutsoudas' approaches therefore have in common that they attempt to restrict their respective reduction rule(s) in such a way that it will only generate grammatical surface forms, i.e. the reduction rule not only deletes constituents, it also attempts to generate correct surface orders. This is implicit in the directionality constraint and more explicit in Ross' conjunction reduction rule which regroups constitutes before it deletes some of them. Furthermore the reduction rules are constrained in such a way that they will only generate surface orders which are identical to the orders permitted in unreduced sentences, that is both Ross' rules and Koutsoudas' predict that if in a given language the object precedes the verb in an unreduced structure, it will also do so in a reduced structure. For example, the reduction rules predict that an unreduced SOV + SOV order will always reduce to an SO + OV order.[2] However, in many languages SOV + O reductions are also grammatical

[2] In this paper the following abreviations are used:
S = subject of a sentence (except if used in a phrase marker, where S represents the sentence node); V = verb of a sentence; O = object of a sentence; ADV = adverb of a sentence; P = participle of a sentence.

surface reductions of an unreduced SOV + SOV structure, that is these languages allow split object coordination as the two objects do not have to be adjacent in the reduced surface structure. As Ross' and Koutsoudas' reduction rules do not generate any reduced structures with split coordination, ad hoc movement rules are needed which move one of the non-identical constituents. For instance, in the above case, an object movement rule would convert the SO + OV output order of the reduction rule into a SOV + O order. A specific example discussed by both Ross and Koutsoudas is split object coordination in HINDI. In HINDI the surface order of constituents is SOV. However, if we have a coordinate structure like (3a.) below and if the verb is deleted, we not only get a surface order as in (3b.), but also an alternate order as in (3c.).

(3) a. SOV + SOV

b. SO + OV

c. SOV + O

Examples of (3b.) and (3c.) are (4a.) and (4b.) respectively.

(4) a. Jon-ne kela aur safarchand bech lia.
"John banana and apple bought "
'John bought a banana and an apple.'

b. Jon-ne kela bech lia aur safarchand bhi.
"John banana bought and apple also "
'John bought a banana and also an apple.'[3]

(3b.) is the reduced order predicted by Ross' and Koutsoudas' analyses, thus claiming that in HINDI the object precedes the verb, independent of whether it is a conjoined object or not. In (3c.), however, one of the objects follows the verb, which is not permitted in an unreduced sentence, e.g. (5):

(5) *Jon-ne bech lia kela.
'John bought a banana.'

In order to account for (3c.) both Ross and Koutsoudas assumed that HINDI has an underlying SVO order and a movement rule which in Ross' analysis obligatorily postposes the verb. This verb postposing rule applies to unreduced as well as to reduced structures, and it is unordered with respect

[3] The occurrence of also will be discussed later.

to gapping, that is it can apply before gapping, i.e. (6b.), or after gapping, i.e. (6a.).

(6) a.		b.
	SVO + SVO	SVO + SVO
gapping, opt.	SVO + S O	----------
verb postposing, obl.	SOV + S O	SOV + SOV
gapping, opt.	----------	SO + SOV

Split coordination of objects is not only found in HINDI, but also in languages like RUSSIAN and HUNGARIAN.

RUSSIAN:

(7) a. Vanja vodu pil, a Maša vino pila.
"John water drank, and Mary wine drank"
'John drank water, and Mary drank wine.'

b. Vanja vodu, a Maša vino pila.
"John water and Mary wine drank"
'John drank water and Mary wine.'

c. Vanja vodu pil, a Maša vino.
"John water drank and Mary wine"
'John drank water and Mary wine.'

HUNGARIAN:

(8) a. János egy almát vett és János egy banánt vett.
"John an apple bought and John a banana bought"
'John bought an apple and John bought a banana.'

b. János egy almát és egy banánt vett.
"John an apple and a banana bought"
'John bought an apple and a banana.'

c. János egy almát vett és egy banánt.
"John an apple bought and a banana"
'John bought an apple and a banana.'

Ross does not discuss the HUNGARIAN data, but presumably he would account for it in the same way as he does for the RUSSIAN data. In order to generate sentences like (7c.), Ross claims that languages like RUSSIAN have a rule called 'scrambling' which places the verb after the object. He furthermore claims that gapping is an 'anywhere' rule that can either apply before or after scrambling, allowing for the following derivations:

(9) a.	SVO + SVO	b.	SVO + SVO
gapping, opt.	SVO + S O		----------
scrambling, opt.	SVO + S O		SOV + SOV
gapping, opt.	----------		SO + SOV

Thus, both orders are generated.[4]

Contrary to Ross who needs one movement rule -- called verb-postposing -- for HINDI and another movement rule -- called scrambling -- for languages like RUSSIAN, Koutsoudas argues that only one movement rule is needed to account for object coordination in HINDI, RUSSIAN, and HUNGARIAN, namely a rule that preposes the object after coordination reduction has taken place, resulting in the following derivation.

(10)	SVO + SVO
c.r., opt.	SVO + S O
obj. pr., opt.	SOV + S O

Object preposing is optional. If it does not apply, sentences like (7b.) and (8b.), are generated, if it does apply, (7c.) and (8c.) are generated.

The above data shows that Koutsoudas' analysis is more general than that of Ross'. Furthermore Koutsoudas' analysis is independently motivated for RUSSIAN and HUNGARIAN if we assume that their underlying form has an SVO order as there has to be a rule that converts SVO orders to SOV ones. However, Koutsoudas' rule has one major drawback -- it allows for the generation of ungrammatical surface forms. That is, if RUSSIAN has an object preposing rule that follows coordination reduction, this rule will not only generate all of those reduced structures which are grammatical in RUSSIAN but cannot be directly generated by Koutsoudas' coordination deletion rule, but it will also generate SV + SOV surface structures, which can be derived from an underlying SVO conjunction.

(11)	SVO + SVO
c.r., opt.	SV + SVO
obj. pr., opt.	SV + SOV

[4] For a detailed discussion of Ross' approach see Sanders (1970) and Koutsoudas (1971).

A derivation like (11), however, results in RUSSIAN as well as in HUNGARIAN in ungrammatical surface forms, e.g. (12) and (13).

RUSSIAN:

(12) *Vanja kupil, a Maša jabloko s"ela
"John bought, and Mary the apple ate"

HUNGARIAN:

(13) *Jànos vett ès Vili egy almát evett.
"John bought and Bill an apple ate"

Consequently, in order to block the generation of sentences like (12) and (13), Koutsoudas has to constrain his object preposing rule so that it does not apply if the object is in the second conjunct.

Of the three analyses mentioned at the beginning of this paper, only those proposed by Ross and Koutsoudas have been discussed so far. Sanders' analysis was left aside, because its premises differ considerably from those of Ross' and Koutsoudas'. While these assume that constituents are ordered in their underlying syntactic representation, Sanders assumes that underlying structures are order free and that surface order is imposed by a set of ordering rules. He furthermore assumes that coordination reduction precedes the application of these ordering rules, i.e. the same set of rules will impose a surface order on unreduced and on reduced sets of constituents. From this follows that the surface order of reduced sentences does not differ from the surface order of unreduced sentences. However, as we have seen above, the surface order of reduced sentences is not always identical to that of unreduced sentences. We have also seen that Ross and Koutsoudas try to account for this fact by assuming the existence of movement rules that apply after coordination reduction. However, Sanders cannot make use of special movement rules which would apply after coordination reduction, as such rules would violate one of the constraints he imposes on his grammar, i.e. the Invariant Order Constraint.[5] He therefore has to formulate his ordering

[5] The Invariant Order Constraint "requires that if an element A is ordered to the left of an element B in any line of any derivation, there is no line in that derivation in which A is ordered to the right of B." (Sanders, 1970: 1). In other words, constituents cannot be moved around by rules after ordering has taken place.

rules in such a way that they will generate all of the surface forms that occur in reduced sentences. The two ordering rules that Sanders proposes for languages like RUSSIAN are (14) and (15) below (Sanders' (43i.) and (43ii.), p. 21).

(14) (-O, O) → (-O & O) (a non-object precedes an object)

(15) (-V, V) → (-V & V) (a non-verb precedes a verb)

We can infer from the way Sanders applies these rules that they are ordered with respect to each other, i.e. (14) always precedes (15), and that the re-application of the rules is optional.[6] The latter assumption is made use of to derive reduced SO+SOV surface orders, e.g. (16) (Sanders (45) right hand column, p. 21).

(16) a. (S, (V, O)), (S, O)
$\quad\quad$ -O $\quad$ O $\quad$ -O O
$\quad\quad$ O $\quad$ -O

$\quad\quad$ RULE 14

$\quad$ b. (S & O) & (S & (V, O))
$\quad\quad$ -O $\quad$ O $\quad$ -O $\quad$ O
$\quad\quad$ -O $\quad\quad$ O

$\quad$ c. (S & O) & (S & (V, O)
$\quad\quad\quad\quad\quad\quad$ V -V

$\quad\quad$ RULE 15

$\quad$ d. (S & O) & (S & (O & V))

In (16d.) all the constituents are ordered with respect to each other. As the rules are optional, rule (14) does not have to reapply to (16c.), but it

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[6] As all constituents have to be ordered with respect to each other, this means that if an ordering rule A does optionally not apply, a later rule B has to order the constituents that were left unordered by rule A. This implies that rules have to overlap which is the case for the RUSSIAN rules, as both a non-object and a non-verb can refer to subjects. Thus the concept of optionality used by Sanders differs from what is generally understood by optionality in transformationally grammar, i.e. rule A can or cannot apply, but not rule A can or cannot apply and if it does not apply, the structure that could have been effected by rule A has to be effected by rule B.

could reapply, and if it does, the result is an ungrammatical surface form, e.g. (17d.).

(17) a. (S, (V, O)), (S, O)
- O O - O O
O - O

RULE 14

b. (S & O) & (S & (V, O))
- O O - O O
- O O

c. (S & O) & (S & (V, O))
-O O

RULE 14

*d. (S & O) & (S & (V & O))

If instead of rule (15), rule (14) reapplies to (17c.), (17d.) is generated as a surface order. But (17d.) is not only ungrammatical in RUSSIAN, it is according to Ross' and also according to my analysis a surface order which is expected to be ungrammatical in all languages.

Aside from generating ungrammatical surface forms, Sanders' analysis faces another problem, namely the fact that it allows conjunct switching as lines (a.) and (b.) in (16) show. That is, as the reapplication of the two ordering rules is optional, an unordered (S (V, O)), (S, O) structure can be converted either into an ordered (S & (V & O)) & (S & O) structure or into an ordered (S & O) & (S & (V & O)) structure by switching the order of the two conjuncts. However, in certain instances the order of two or more conjuncts cannot be switched without changing the semantic content. This is true for all those cases, where and has an and then interpretation. For instance, the order of (18) cannot be changed to that of (19), as the two sentences do not have the same meaning.

(18) I bought and cooked some mushrooms.

(19) I cooked and bought some mushrooms.

(18) does not have the same meaning as (19). While (18) is derived from a structure like (20), (19) is derived from a structure like (21) or (22).

(20) I bought some mushrooms and I cooked some mushrooms.

(21) I cooked and I bought some mushrooms.

(22) I cooked some mushrooms and I bought some mushrooms.

In Sanders' approach, however, a set of constituents with the semantic content of (20) could be converted into a surface form like (18) or (19).

Summarizing the brief discussion of Ross', Koutsoudas', and Sanders' treatments of coordination reduction we can say that they all generate the data, but that they contain serious flaws. One of the major flaws is, of course, that not only grammatical but also ungrammatical surface forms are generated. A second major flaw is the lack of generality, and the need for ad hoc movement rules. Though according to Koutsoudas only one reordering rule is needed which furthermore is independently motivated, this is not true any longer if we look at a wider range of coordination reductions and at more languages. As Ross as well as Koutsoudas and Sanders restrict their data nearly exclusively to verb and object reductions, they overlook that split coordination is not only found in object reduction in languages like RUSSIAN and HUNGARIAN, but that split coordination is a very common phenomenon that is found in many languages and with all kinds of constituents. And for every case of split coordination, Ross and Koutsoudas have to assume the existence of an additional and not otherwise motivated movement rule. In RUSSIAN, for instance, split coordination is not only found in reduced sentences with a structure as in (23b.), but is also found in a number of other constructions, e.g. (24b.) to (27b.).

(23) a. SOV + SOV
b. SOV + O
c. SO + OV

(24) a. S V + S V
b. S V + S
c. S + S V

(25) a. SOV + SOV
b. SOV + SO
c. SO + SOV

(26) a. AN + AN
b. AN + A
c. A + AN

(27) a. SVO + SVO
b. SVO + SV
c. SV + SVO

That split coordination is not only found with objects is obvious in examples (24b.) and (26b.), for which Ross and Koutsoudas, and probably also Sanders, would need specific movement rules, namely a verb preposing rule for (24b.) and a noun preposing rule for (26b.). A closer investigation of (23) to (27) reveals that an alternate order is found in all those cases where the directionality constraint operated from right to left, i.e. backward, and it is characteristic of the alternate order that it could be derived by left to right or forward reduction. We can therefore say that whenever split coordination occurs as an alternate order, the directionality constraint is neutralized and that it is the function of movement rules like Koutsoudas' object preposing rule to optionally create the alternate order which is excluded by the directionality constraint.

It was said above that split coordination is not only found in RUSSIAN but also in many other languages. Let us take ENGLISH, for example. In ENGLISH possessive constructions like my sister's garden, the possessor precedes the possessed. Thus we would expect that the conjoined noun-phrases in (28a.) are reduced to (28b.), that is we would expect that reduction operates backward as the identical constituents are on right branches.

(28) a. Both my sister's garden and my friend's garden are overgrown.

b. Both my sister's and my friend's garden are overgrown.

However, (28b.) is not the only way in which (28a.) can be reduced. Consider (28c.).

(28) c. Both my sister's garden and my friend's are overgrown.

In (28b.) and (28c.) the same pattern is revealed that we encountered in RUSSIAN, i.e. if the two identical constituents are on right branches, deletion can go both ways. Split coordination is also found in ENGLISH in sentences like (29), though they might be marginal for some speakers of ENGLISH.

(29) John bought a book for my birthday, and (also) a record.

Both (28c.) and (29) represent instances where the surface order of a reduced sentence is less restricted than that of an unreduced sentence, e.g.:

(30) *My garden sister's is overgrown.

(31) *John bought for my birthday a record.

Below we will now consider some structures which show that in some languages the surface order of reduced sentences can be more restricted than that of unreduced ones. That is, certain constituent orders found in unreduced sentences are not found in reduced sentences. One of these languages appears to be QUECHUA, cf. Pulte (1971).[7] QUECHUA is a so-called free word order language, that is, according to Pulte, it has a scrambling rule. We therefore would expect the following pattern for verb reduction.

(31)

	SVO + SVO	SVO + SVO
gapping, opt.	SVO + S O	----------
scrambling, opt.	SOV + S O	SOV + SOV
gapping, opt.	----------	SO + SOV

However, SO + SOV is not an acceptable surface order in QUECHUA. Pulte therefore suggests a constraint which is specific to QUECHUA and which has the following wording. "In any sentence which has undergone identity deletion of the subject, object, or verb the unreduced conjunct must be left-most." (p.195). In effect Pulte is saying that one part of the directionality constraint does not hold for QUECHUA, namely there is no backward reduction. Which means that in order to account for QUECHUA, both Ross and Koutsoudas will have to place a specific constraint on their coordination reduction rule, while Sanders will have to constrain his ordering rules. All of the above-listed analyses therefore have to use a constraint for QUECHUA which is quite different in nature from the machinery needed to account for split coordination. Below it will be shown, however, that the QUECHUA data can be accounted for if we assume that the grammar of QUECHUA does not contain a rule found in the grammar of all of the other languages investigated so far. An isolated instance of the pattern displayed by QUECHUA is found in ARABIC. In CLASSICAL ARABIC a coordinate structure like (32a.) can be reduced to (32b.) but not to (32c.).

(32) a. VS + VS

b. VS + V

*c. V + VS

[7] More specifically, Pulte discusses the COCHABAMBA dialect of BOLIVIAN QUECHUA.

CLASSICAL ARABIC:

(32) a. akala Ahmed wa shariba Ahmed
"ate Ahmed and drank Ahmed"
'Ahmed ate and Ahmed drank.'

b. akala Ahmed wa shariba.
"ate Ahmed and drank"
'Ahmed ate and drank.'

c. *akala wa shariba Ahmed
"ate and drank Ahmed"

That is, in CLASSICAL ARABIC verbal conjunction will always result in split coordination. However, if we assume the directionality constraint, it is (31c.) that is generated and not (31b.), and an obligatory subject-preposing rule will be needed to generate sentences with a structure like (31b.).

Summarizing the above discussion we can say that if we want to maintain the claim that the deletion process in coordinate structures is subject to the directionality constraint, we not only need one or two language-specific rules and constraints but a great many of them, which will increase as the investigation of coordination reduction proceeds. These rules are necessary to counteract the effect of the directionality constraint. In the following I will show that the constraints on the surface order of constituents in reduced sentences are not due to constraints on the deletion rule but rather are the result of constraints on a regrouping process that applies after coordination deletion. That is, I will argue that the process of coordination reduction is not effected by one rule as in the above-discussed analyses, but by two rules, a deletion rule and a regrouping rule. The deletion rule only operates forward, i.e. of a number of identical constituents only the left-most is retained, and the ouput of the deletion rule undergoes reordering by a regrouping rule. It will be shown that all of the above-discussed examples which seem to deviate from the expected pattern are cases in which regrouping did optionally or obligatorily not apply.

The above claims are justified in that they allow us to explain, without any ad hoc machinery, all of the cases which violated the directionality constraint and that they will allow us to account for a much wider range of data

than any other analysis of coordination reduction (see section 3.). Further support is provided if we compare the pattern found for deletion with that found for pronominalization in coordinate structures. If it is true that pronominalization and deletion are very closely related processes,[8] we would expect that similar constraints hold for both of them. But as was shown by Langacker (1969), pronominalization can only operate forward in conjoined structures, e.g.:

(34) a. John built a boat and John sailed the boat to Hawaii.
b. John built a boat and he sailed it to Hawaii.
c. *He built it and John sailed the boat to Hawaii.

(34b.) but not (34c.) can be derived from (34a.). Below, I will first investigate the deletion rule and the kind of structures it predicts. Specific constraints on deletion like the ones discussed by Sanders and Tai (1972) will be dealt with later. The deletion rule proposed here, i.e. (35), is a universal rule. This claim does not necessarily imply that this rule is included in the grammar of all languages.[9] But it does imply that if a language has coordination reduction, it will have rule (35) and no other rule.

(35) Deletion rule (optional)

In a coordinate structure in which each conjunct contains a constituent which is identical[10] to a corresponding constituent in all other conjuncts, delete all but the left-most of these identical constituents.

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[8] For a detailed discussion see Hankamer (1971). Hankamer argues that pronominalization rules are a special kind of deletion rules.

[9] It seems likely, however, that all languages allow at least some kind of coordination reduction, even though it may be very restricted as it appears to be the case in HAUSA.

[10] I am not concerned in this paper with the definition of identical. It appears that contrary to pronominalization, deletion demands lexical and structural identity as in the example below. However, no crosslinguistic study of the subject was undertaken.

a. John fell down the stairs and everybody laughed about $\left\{\begin{matrix}\text{John}\\\text{him}\end{matrix}\right\}$.
b. *John fell down the stairs and everybody laughed about.

Given rule (35), we can now generate directly, that is, without the help of additional movement rules, all of those forms which proved to be problematic for analyses that impose the directionality constraint, namely all forms which reveal split coordination. Thus, rule (35) will generate the forms with split coordination found in RUSSIAN (see (23) to (27)).

(23')		a.	SOV + SOV	(26')		a.	AN + AN
	delet. r.	b.	SOV + O		delet. r.	b.	AN + A
(24')		a.	S V + S V	(27')		a.	SVO + SVO
	delet. r.	b.	S V + S		delet. r.	b.	SVO + SV
(25')		a.	SOV + SOV				
	delet. r.	b.	SOV + SO				

It is therefore claimed that reduced sentences with split coordination represent the output order of the deletion rule, i.e. they are the more basic forms which did not undergo regrouping.[11] In a given language, the output order of the deletion rule can be grammatical in all cases, in some cases, or in no cases. HINDI and RUSSIAN seem to belong to the first category, i.e. all output orders of the deletion rule are grammatical. Like RUSSIAN, HINDI not only allows split coordination for objects and subjects but also for adjectives, e.g. (36).

HINDI:

(36) a. khubswrat bachhe aur hoshiyar bachhe
"pretty children and clever children"
'the pretty children and the clever children'

b. khubswrat bachhe aur hoshiyar
"pretty children and clever"
'the pretty and clever children'

c. khubswrat aur hoshiyar bachhe
"pretty and clever children"
'the pretty and clever children'

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[11] Not all output orders of the deletion rule will display so-called split coordination, e.g., a. below is reduced to b. by rule (35).

a. John ate and John drank.
b. John ate and drank.

While discussing the output order of the deletion rule and the optionality of regrouping I will, however, generally use examples with split coordination because it is only in these examples that regrouping brings about a change in the surface order of the constituents.

I will call those languages in which the output order of the deletion rule is grammatical for all reduced structures RUSSIAN-type languages.[12] As far as I was able to determine HUNGARIAN comes very close to being a RUSSIAN-type language with one exception. That is, HUNGARIAN does allow split coordination for most reductions, including adjectives, e.g. (37), but it does not allow SVO + SV reductions, e.g. (38b.).

HUNGARIAN:

(37) a. a helyes gyerekek és az okos gyerekek
"the pretty children and the clever children"

b. a helyes gyerekek és az okosak
"the pretty children and the clever"
'the pretty and clever children'

c. a helyes és az okos gyerekek
"the pretty and the clever children"

(38) a. János vett egy almát és Vili evett egy almát.
"John bought an apple and Bill ate an apple."

b. *?János vett egy almát és Vili evett.
"John bought an apple and Bill ate."

c. János vett és Vili evett egy almát.
"John bought and Bill ate an apple."

On the basis of the ungrammaticality of (38b.) HUNGARIAN therefore has to be classified as a language in which some but not all of the output orders of the reduction rule are grammatical. Languages like ENGLISH and GERMAN fall into the same class as HUNGARIAN. Thus the above-mentioned reduction for possessive constructions in ENGLISH can be accounted for by assuming that (39b.) is the output order of the deletion rule, which -- by

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[12] All of the above claims that make an all or nothing statement may ultimately be proven false. Thus, it may turn out that there exist instances in HINDI or RUSSIAN where regrouping is not optional, and there may be structures in JAPANESE for which it is. Though I used a fairly large corpus, I did not cover all possible conjunction reduction patterns. Especially in the area of conjunction reduction in other than and-coordinated structures my data is very scetchy.

application of regrouping -- can be optionally transformed into (39c.).[13]

(39) a. My mother's house and my sister's house were sold by an agent.

b. My mother's house and my sister's were sold by an agent.

c. My mother's and my sister's house were sold by an agent.

The output order of rule (35) is also acceptable in ENGLISH if a locative or a temporal adverb has been deleted in the second conjunct, i.e. (40b.) is an acceptable surface form.[14]

(40) a. John left yesterday and Mary arrived yesterday.

b. John left yesterday and Mary arrived.

Similarly, if we assume rule (35) and optionality for the regrouping process, we can account for the fact -- pointed out by Ross in his thesis -- that in GERMAN subordinate clauses the identical verb can occur in the first or in the second conjunct. Thus (41a.) below is converted to (41b.) by rule (35), and can subsequently be rearranged to (41c.) by regrouping.

(41) a. Weil Hans keine Zeit hat und weil Peter kein Geld hat, können wir nicht ins Kino gehen.

"Because Hans no time has and because Peter no money has, can we not to-the movies go"

'We cannot go to the movies because Hans has no time and because Peter has no money.'

---

[13] Whether or not regrouping can be truly optional, that is whether or not the speaker can freely choose between the regrouped and the non-regrouped version of a reduced sentence, seems to vary from language to language. In RUSSIAN there appears to be no semantic difference between an SVO + SV order and its regrouped SV + SVO version. This is, however, not true for ENGLISH, where the non-regrouped sentence usually conotates an afterthought. This phenomenon will be treated in more detail in the discussion of constraints on regrouping.

[14] It is interesting that in the case of temporal adverbs the output order for the deletion rule is more acceptable than the order achieved by regrouping, i.e. (39c.) below.

(39) c. John left and Mary arrived yesterday.

A possible reason is that by regrouping the adverb is too far removed from the constituents it modifies. Support for this assumption is that if the conjuncts are lengthened, a final position of the adverb becomes even less acceptable.

? Mary sold all of her books and John gave his records away yesterday.

(41) b. Weil Hans keine Zeit hat und Peter kein Geld, können wir nicht ins Kino gehen.

"Because Hans no time has and Peter no money, can we not to-the movies go"

'We cannot go to the movies because Hans has no time and Peter no money.'

c. Weil Hans keine Zeit und Peter kein Geld hat, können wir nicht ins Kino gehen.

"Because Hans no time and Peter no money has, can we not to-the movies go"

'We cannot go to the movies because Hans has no time and Peter has no money.'

While in languages like ENGLISH, HUNGARIAN, and GERMAN the output order of the deletion rule is an acceptable surface order for some of their and conjoined structures, regrouping is never optional[15] in languages like JAPANESE and MANDARIN CHINESE. In these languages split coordination does not occur, that is, regrouping has to apply whenever its structural description is met, e.g. (42b.) always has to be converted to (42c.).

JAPANESE:

(42) a. Toyo wa ringo o katta, Toyo wa banana o katta.
"Toyo subj-marker apple obj-marker bought, Toyo subj-marker banana obj-marker bought"
'Toyo bought an apple and Toyo bought a banana.'

b. *Toyo wa ringo o katta to banana.
"Toyo subj-marker apple obj-marker bought and banana"

c. Toyo wa ringo to banana o katta.
"Toyo subj-marker apple and banana obj-marker bought"
'Toyo bought an apple and a banana.'

Up to now it has been shown that there are languages in which the output order of the deletion rule always corresponds to an acceptable surface form, while there are other languages in which the output order of the deletion rule only sometimes or never corresponds to an acceptable surface form. It was

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[15] The above statement is not quite correct as JAPANESE at least does allow non-regrouped surface forms if an afterthought is to be expressed. However, a special morpheme has to occur to mark the non-regrouped constituent as an afterthought. For the discussion of this phenomenon see section 2.

also pointed out that if the output order of rule (35) is an acceptable surface form, there always exists an alternate order which is brought about by the application of regrouping. There are, however, also languages in which the output order of the deletion rule is the only acceptable surface order, i.e. regrouping cannot apply. This seems to be the case in QUECHUA. As mentioned above, QUECHUA in Pulte's analysis does not allow that the reduced conjunct is left-most after subject, object, or verb deletion.[16] In other words, the unreduced conjunct cannot be right-most. According to my analysis, the output of the deletion rule will always be such that the unreduced conjunct is left-most while the right-most is reduced. Only regrouping can, given certain conditions, make the right-most conjunct appear to be the unreduced one. QUECHUA therefore seems to be a language that does not allow regrouping in and conjunctions. Thus, in the derivation below, (43a.) can be reduced to (43b.) by the application of rule (35), but (43b.) cannot undergo regrouping as (43c.) is not an acceptable surface form in QUECHUA.

(43)	a.	SOV + SOV
delet. r.	b.	SOV + SO
regroup.	c.	*SO + SOV

Other instances where regrouping cannot apply are the previously-mentioned example from ARABIC where finite verbs cannot be regrouped, and an example found in CHIPPEWA where regrouping cannot take place for objects if one of them is animate and the other one inanimate. This latter example will be discussed more thoroughly in the section on constraints. The following chart provides an overview as to what group individual languages belong to. The 'rarely' category includes those languages which only allow the output order of the deletion rule as an alternated surface order if a special morpheme is present to mark an afterthought or in disjunctions.

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[16] Pulte only discusses subjects, objects, and verbs. This might imply that the constraint does not hold for adverbs and adjectives, or it might imply that these constituents were not investigated, and that the constraint holds for all constituent types. I will assume the latter.

Output Order of the Deletion Rule

Languages	As an alternative surface order			As the only surface order	
	Always or nearly always	Sometimes	Rarely	Sometimes	Always
ARABIC			x	x	
BENGALI			x		
CHINESE (MANDARIN)			x		
CHIPPEWA			x	x	
ENGLISH		x			
GERMAN		x			
HAUSA				x	
HEBREW			x		
HINDI	x				
HUNGARIAN	x				
JAPANESE			x		
NAVAHO			x		
QUECHUA					x?
RUSSIAN	x				
TURKISH[17]		x			

[17] According to Ross, TURKISH is a language that has SO + SOV and SOV + SO verbal reductions, which in my analysis implies that in TURKISH regrouping is optional after verbal reduction. The TURKISH dialect I worked with only allows optionality for regrouping if an intransitive verb has been deleted, but not after the deletion of a transitive verb, e.g.:

(1) a. Jon ve Mary ulaştı.
"John and Mary arrived."

b. Jon ulaştı ve Mary de.
"John arrived and Mary also."

(2) a. Jon muz ve Bill balık satın aldı.
"John banana and Bill fish bought"
'John bought a banana and Bill a fish.'

b. *Jon muz satın aldı ve Bill balık.
"John banana bought and Bill fish"

Concluding the discussion of the deletion rule we can say that by assuming an exclusive left to right or forward application of the rule, we can account for all of those cases which are problematic for a coordination reduction rule that is subject to the directionality constraint. In all of the problematic cases the directionality constraint predicts that of two or more identical constituents the rightmost is retained while in fact it is the leftmost that is retained. In order to account for these deviations from the predictions of their rules, both Ross and Koutsoudas need movement rules that are not independently motivated. On the other hand, the analysis proposed in this paper provides a principled and general account for all cases of split coordination by arguing that deletion only operates from left to right and that the output order of the deletion rule can be -- and in some cases must be -- a surface order.

1.2 The regrouping rule

Up to now we discussed those reduced structures that correspond to the output order of the deletion rule. However, not all reduced sentences correspond to such an output order and I therefore propose an additional regrouping rule that applies after deletion and that generates all of those structures which are not directly generated by the deletion rule. In working with regrouping and constraints on regrouping and deletion it became obvious that regrouping as defined in this paper functions to reestablish the scope relations that existed before deletion applied. For instance, in (44a.) below both verbs are modified by the same adverb.

(44) a. John ate greedily and John drank greedily.

After deletion, however, only the verb in the first conjunct member is modified by the adverb, i.e. (44b.) is not a paraphrase of (44a.).

(44) b. John ate greedily and drank.

Regrouping therefore has to apply to move the adverb into a position where it can modify both verbs as in (44c.) below.

(44) c. John ate and drank greedily.

In order to convert the above b. sentence into the c. sentence, I propose

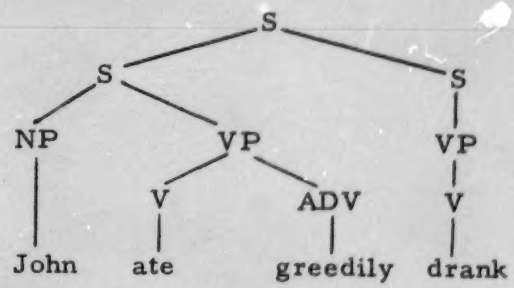
the following universal regrouping schema, which will rearrange constituents after deletion has taken place.

(45) Regrouping

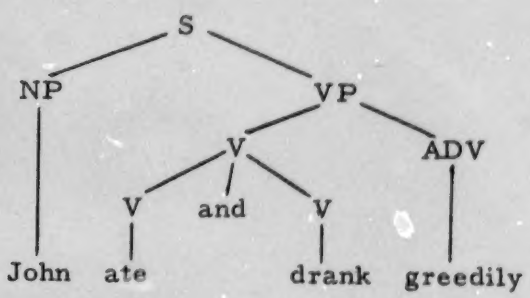
Chomsky-adjoin the lowest constituent that exhaustively dominates all lexical nodes in the reduced conjunct to the corresponding node in the unreduced conjunct.

Rule (45) will change (46a.) which represents (44b.) to (46b.) below.[18]

(46) a.

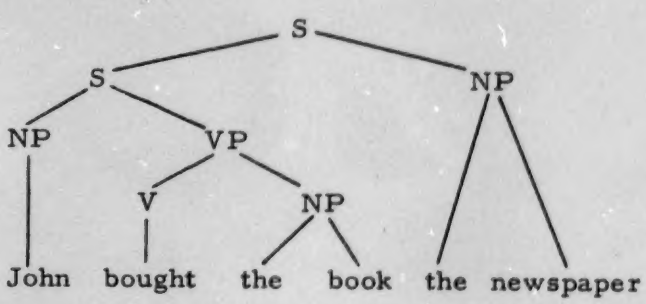


b.



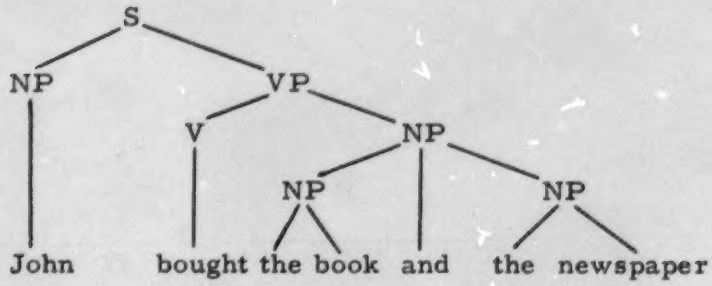
Rule (45) will also apply to structures like (47a.) below, converting them to structures like (47b.).

(47) a.



[18] I am not concerned in this paper about when, where and how morphemes like and and or are inserted.

(47) b.



(47b.) is an example where regrouping did not change the linear order of constituents but only their dominance relations. That the linear order is not changed is due to the fact that after coordination reduction the two non-identical constituents happen to be adjacent. If for instance the VP in (47a.) contained an adverb as in (48) below, regrouping would change the order of constituents to that in (48c.).

(48) a. John bought the book last night and John bought the newspaper last night.

b. John bought the book last night and the newspaper.

c. John bought the book and the newspaper last night.

Most analyses of coordination reduction assume some kind of regrouping, either before or after anaphoric deletion. Koutsoudas is to my knowledge the only one who assumed that no form of regrouping takes place. In two of his papers (1968, 1971) he tries to establish that regrouping is not only a superfluous rule but that its presence in the grammar actually complicates the derivation of certain sentences for instance sentences with split object coordination in HUNGARIAN. Within the framework of his approach this was a possible assumption, given that the only function of a regrouping process would have been to create A-over-A structures.[19] In other words, in Koutsoudas' analysis no rearrangemement of the linear order of constituents has to take place as his deletion rule is forumulated in such a way that the

[19] Below is an example of an A-over-A structure, i.e. the dominating node is identical to the nodes that are dominated.

conjoinable constituents are always adjacent after the application of the rule. All Koutsoudas has to show, therefore, is that the formation of an A-over-A structure is superfluous as there are no rules to refer to such a structure. He attempts to do this by arguing that all movement rules like passivization and topicalization precede coordination reduction, and that agreement and pronominalization rules do not necessarily have to refer to an A-over-A structure. There exists, however, considerable evidence that the presence of a common node is essential both for agreement and pronominalization, that is regrouping must at least be able to optionally apply, even if the conjoinable constituents are adjacent after the application of the reduction rule. Consider the following data from RUSSIAN.

(49) a. Vanja priexal i Maša.
[sing]
"Vanya arrived and Masha."

b. Vanja i Maša priexali.
[plur]
"Vanya and Masha arrived."

c. *Vanja priexali i Maša.
[plur]
"Vanya arrived and Masha."

d. *Vanja i Maša priexal.
[sing]
"Vanya and Masha arrived."

(50) a. Priexal Vanja i Maša.
[sing]
"Arrived Vanya and Masha"
'Vanya arrived and Masha.'

b. Priexali Vanja i Maša.
[plur]
"Arrived Vanya and Masha"
'Vanya and Masha arrived.'

The reason why a singular verb cannot follow a conjoined subject, i.e. (49d.), but can precede a conjoined subject becomes obvious when we look at the derivation of these sentences.[20]

[20] The derivation given above does not detail all stages of the derivation as it assumes the application of the agreement rule, either after coordination reduction or after regrouping.

(49') Vanja priexal i Maša priexala.
"Vanya arrived and Masha arrived."

del. Vanja priexal i Maša.
(opt.) "Vanya arrived and Masha."

regr. Vanja i Maša priexali.
(opt.) "Vanya and Masha arrived."

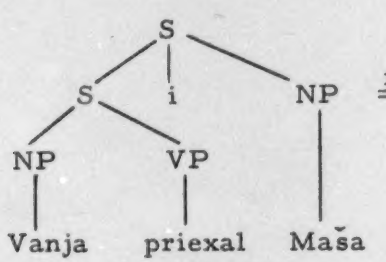
(50') Priexal Vanja i priexala Maša.
"arrived Vanya and arrived Masha"
'Vanya arrived and Masha arrived.'

del. Priexal Vanja i Maša.
(opt.) "Arrived Vanya and Masha"
'Vanya and Masha arrived.'

regr. Priexali Vanja i Maša.
(opt.) "Arrived Vanya and Masha"
'Vanya and Masha arrived.'

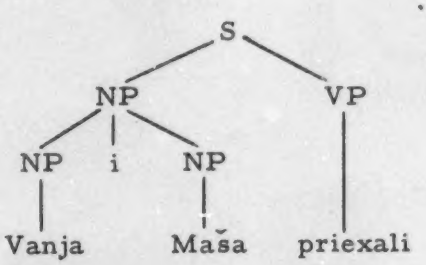
(49') and (50') show that the application of the regrouping rule accounts for the plural marking of the verb. If regrouping does not apply, that is if the output order of the deletion rule is the surface order as in (49a.) and (50a.), then the verb is in the singular as its subject is in the singular. However, if regrouping applies, then the subject is converted into a conjoined one and the verb receives a plural marking as in (49b.) and (50b.). This becomes very clear if we look at the tree structures below, where (51a.) corresponds to (49a.), (51b.) to (49b.), (52a.) to (50a.), and (52b.) to (50b.).

(51) a.

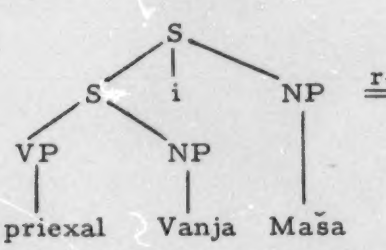


regr. ⟹

b.

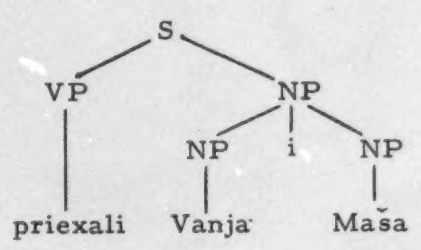


(52) a.



regr. ⟹

b.



The generation of (49d.) is excluded because a conjoined subject to the left of the verb can only be created by the regrouping process, which always results in an A-over-A structure and subsequent plural verb marking. Koutsoudas, on the other hand, has no way to exclude the generation of (49d.) except by some ad hoc constraint. Furthermore, his approach will generate identical derived structures for (50a.) and (50b.) i.e. structures like (52a.), which precludes an explanation of the difference between the two sentences. Concluding we can therefore say that any analysis that attempts to account for the properties of reduced sentences will need a regrouping process in order to account for facts like the RUSSIAN ones. The claim that regrouping is part of the grammar of most languages -- though probably not of all -- also frees us from having to order all movement rules before coordination reduction. Though a rule like topicalization may apply before coordination reduction and regrouping, it can also apply after to a structure like (53a.), which would be converted to (53b.) given the Coordinate Structure Constraint.[21]

(53) a. John bought the book and the newspaper.

b. The book and the newspaper John bought.

Above we have considered some evidence which supports the assumption that there is a universal regrouping process. However, we have not yet investigated in any detail the kind of changes that are brought about by regrouping. The question is: does the rule simply form A-over-A structures as assumed by Tai (1971) and also in rule (45) above, or does it have additional functions! Below I will show that regrouping is a process that operates in two steps, i.e. it brings about the formation of A-over-A structures and, under certain circumstances, raises the constituent that acted as antecedent to the deletion. The need for the latter process becomes evident if we consider the following derivation.

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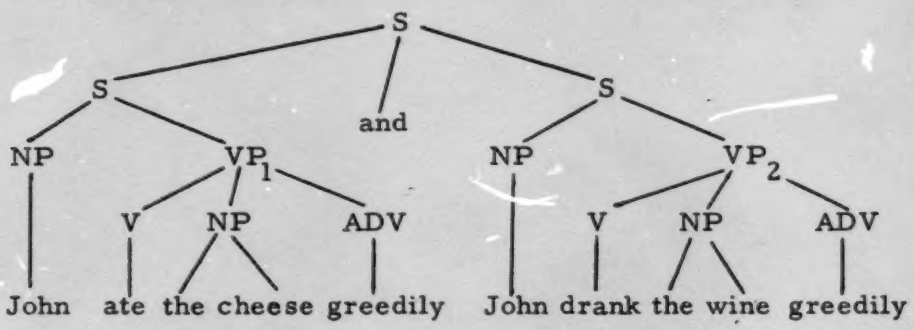
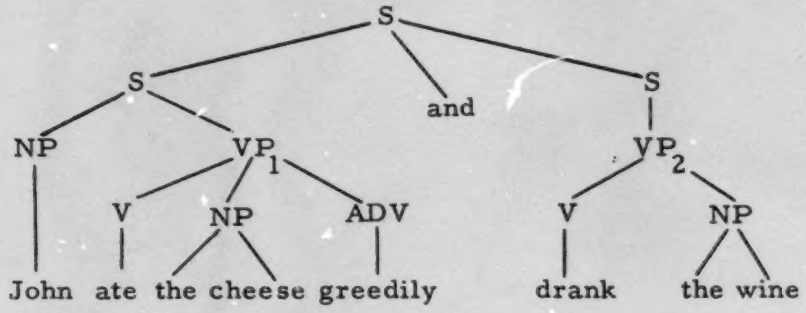
[21] The Coordinate Structure Constraint was proposed by Ross (1967a). It has the following wording: "In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct." (p.161).

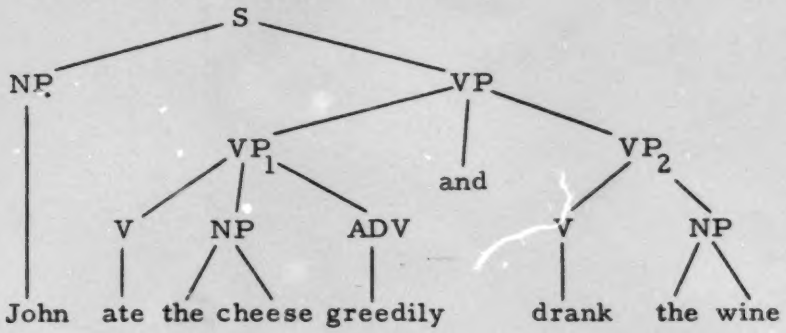
(54) a. Input to the deletion rule



b. Output of the deletion rule and input to the regrouping rule



c. Output of the regrouping rule

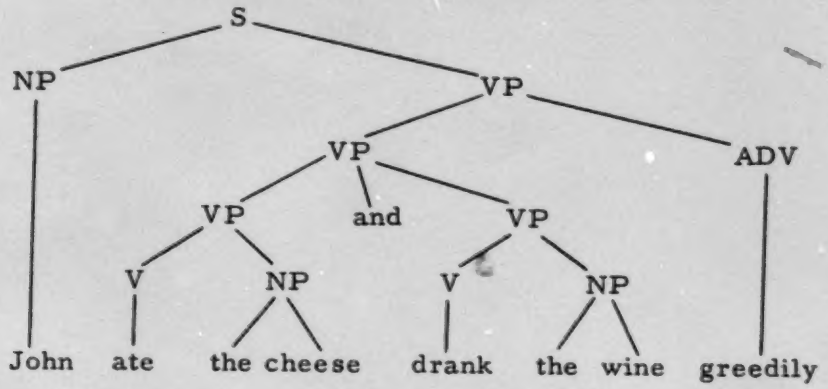


When rule (45) applies to (54b.), it will choose VP_2 for regrouping as that is the highest node that exhaustively dominates the remaining constituents of the reduced conjunct and will Chomsky-adjoin it to VP_1, converting (54b.) to (54c.). However, (54c.) is not a paraphrase of (54a.). Consequently, regrouping as specified in (45) can not bring about the desired surface order which in the case of (54a.) above would be (54d.) below.

(54d.) John ate the cheese and drank the wine greedily.

In order to generate (54d.), rule (45) has to have the power to move the adverb to the right of both conjuncts.[22] That is, whenever the node that acted as antecedent for the deletion is dominated by one of the conjunct nodes after the formation of the A-over-A structure, that node has to be moved out and raised. In (54c.), for example, the adverb is dominated by one of the conjoined verb phrases and consequently has to be raised and Chomsky-adjoined to the coordinate node. And as the adverb in (54b.) is phrase-final, it will have to be adjoined to the right of the conjunct node, converting (54c.) to (54d'.).

(54) d'.



I therefore propose the following addition to rule (45).

(45') If after the formation of the A-over-A structure one of the conjunct nodes dominates a constituent which acted as antecedent[23] to the deletion of an identical constituent, and if this node is conjunct initial or conjunct final, that node is raised and Chomsky-adjoined[24] to the right or to the left of the coordinate node. The raised constituent is adjoined to the left if it is conjunct-initial, it is adjoined to the right if it is conjunct final.

---

[22] In an A-over-A structure I will refer to the whole structure as a coordinate structure, to the node that dominates it as coordinate node, to the members of the coordinate structure as conjuncts, and to the nodes that dominate the conjuncts as conjunct nodes.

[23] The notion of antecedent will be discussed in some detail later.

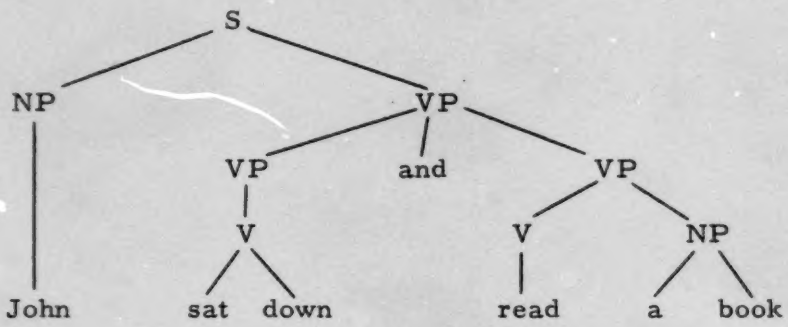
[24] Chomsky-adjunction was chosen over sister-adjunction as the structure created by the former seems to be required to account for certain constraints on movement transformations (cf. ftnt. 21). It is, however, possible that a reinterpretation of the data will remove the need for Chomsky-adjunction.

(45') claims that the antecedent constituent is not only moved but also raised. Some justification for this claim will be provided during the discussion of constraints on deletion and regrouping. Further support comes from facts involving intonation. Thus, (55a.) below has a different intonation pattern than (56a.) which is reflected in the respective tree structures (55b.) and (56b.).

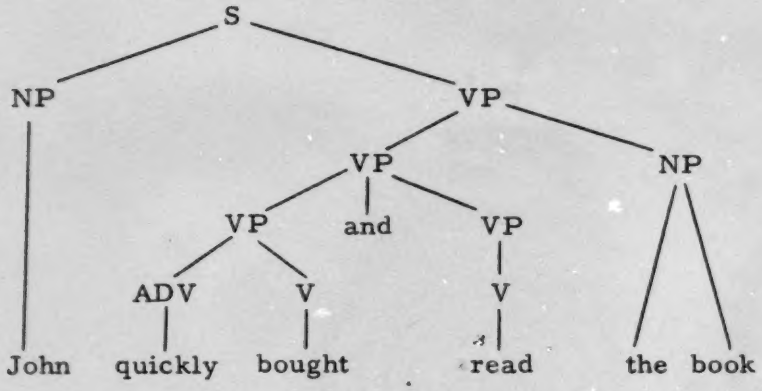
(55) a. John sat down and read a book.

(56) a. John quickly bought and read the book.

(55) b.



(56) b.



A slowed-down utterance of (55) and (56) reveals that in (55) a break can be made before and but not before the object NP, while in (56) the most natural break is before the object NP and not before the and. This difference is reflected in (55b.) and (56b.). Another example is (57a.) below which is ambiguous in writing but which is disambiguated by intonation to either (57b.) or (57c.).

(57) a. John quickly ran home and closed the door.

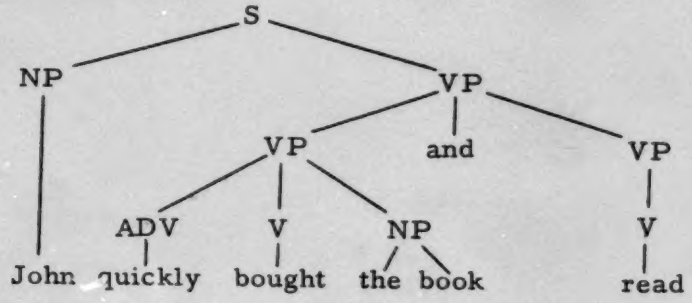
b. John [[quickly ran home] and [closed the door]].
VP VP VP

c. John [quickly [[ran home] and [closed the door]]]
VP VP VP VP

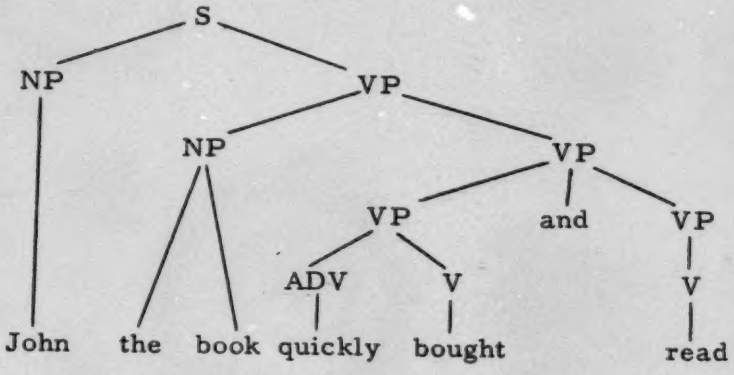
If a speaker wants to say (57b.), he can make a break before the and, while no such break is possible in (57c.) where both verbs are modified by the same adverb.

Besides claiming that the antecedent constituent is raised, rule (45') also makes certain claims about where the raised constituent is Chomsky-adjoined. The rule states that the direction of the raising depends on the position of the antecedent constituent. (58) below shows that the direction of the raising is essential, as a non-adherence to the constraint as stated in rule (45') will result in ungrammatical surface forms.

(58) a. After deletion

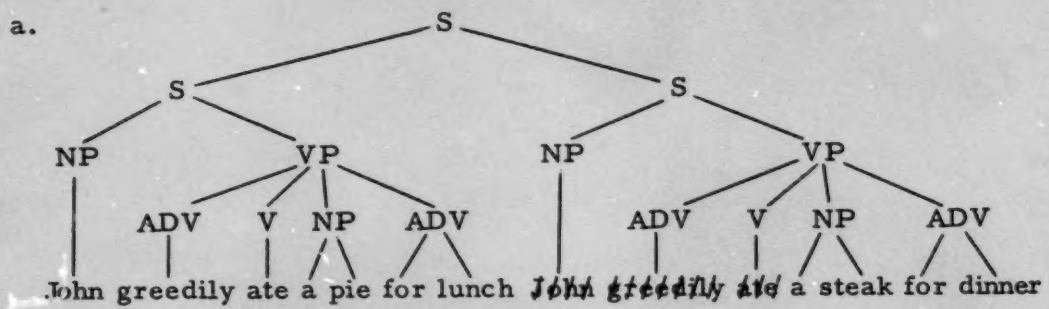


*b.

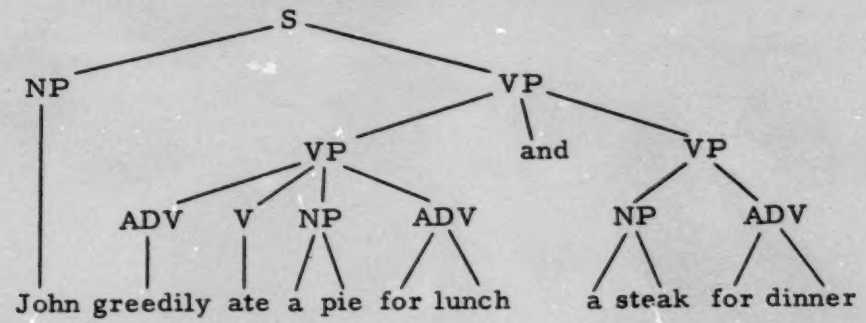


Rule (45) also insures that if two or more antecedent constituents are in conjunct-initial or conjunct-final position, the original order of constituents is retained as in the following derivation.

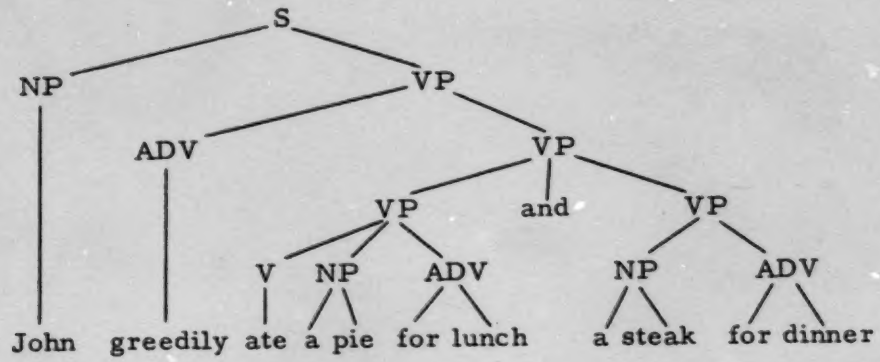
(59) a.



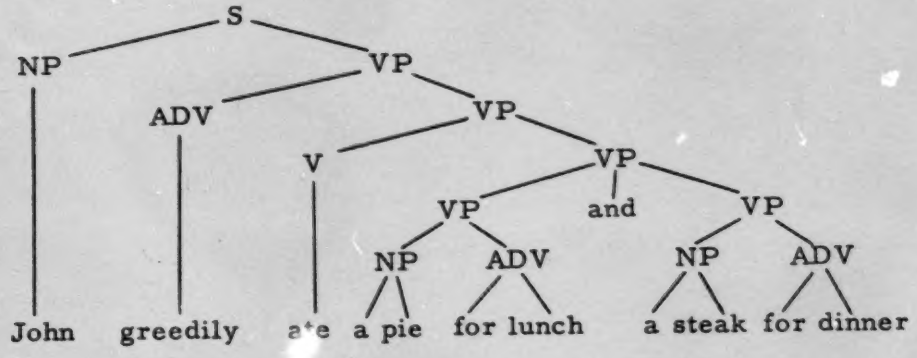
b. Rule (45), formation of A-over-A structure



c. First application of rule (45'), raising of antecedent constituent



d. Second application of rule (45')



In the above derivations, (45') raises what has been referred to as the 'antecedent constituent', namely that constituent which acted as antecedent to the deletion of an identical constituent in another conjunct. However, the question arises: how does the rule know what is and what is not an antecedent constituent? And the answer is: it doesn't. Nothing in (55b.) above indicates that the manner adverb acted as antecedent. But this information is essential. Consider the following data, where (60) is the input to the regrouping rule.

(60) Yesterday John bought some food and cooked.

If (60) is derived from (61a.) below, regrouping has to apply to generate (61b.), but if (60) is derived from (62), regrouping cannot apply.

(61) a. Yesterday John bought some food and yesterday John cooked some food.

b. Yesterday John bought and cooked some food.

(62) Yesterday John bought some food and yesterday John cooked.

The way the regrouping rule has been formulated it could always change an input like (60) to a surface form like (61b.), independent of the underlying structure of (60). This means that the reduction process can be instrumental in changing the meaning of a sentence, i.e. the output sentence of the reduction process is not necessarily a paraphrase of the input sentence. It is therefore of crucial importance that the regrouping rule has access to an earlier presentation of the structures it is operating on. This information has to be present independent of the formulation of the reduction and regrouping rules. Consider, for instance, the regrouping process proposed by James Tai, who, as far as I know, is the only one to discuss the process of regrouping in any detail. His rule[25] Chomsky-adjoins the constituents of the reduced conjunct --which in his analysis might be either the right or the left conjunct depending on the branching -- to the corresponding constituent in the unreduced conjunct. Tai's rule is supposed to not only account for regrouping in sentences as discussed above, but also for respectively and each other regroupings. In order to generate respectively sentences, Tai must allow--and his examples show that he does -- for the individual constituents of the reduced conjunct to be

[25] See Tai, 1971: 269.

Chomsky-adjoined to the corresponding constituents in the unreduced conjunct. This process can however bring about a meaning change. Consider the following example.

(63) Bill ate and John bought some apples.

(63) is two-ways ambiguous. It can either have the meaning of (64) or the meaning of (65).

(64) Bill ate some apples and John bought some apples.

(65) Bill ate something and John bought some apples.

If (63) is a paraphrase of (65), it cannot undergo regrouping. However, at the point where regrouping applies in Tai's analysis, we do not know whether (63) has the meaning of (64) or of (65). In either case (63) can be regrouped to (66).

(66) Bill and John ate and bought some apples respectively.

Thus, even if (63) has the meaning of (65), it can be converted to (66), which constitutes a meaning change.

In the following I will therefore investigate how the regrouping rule can be provided with the necessary information about the constituent structure that a given string had before coordination reduction applied. One possibility is to assume that a global constraint[26] holds between the coordination rule and the regrouping rule to the effect that regrouping can only apply if coordination reduction did. However, such a constraint would be of no use in the above example as (60), even if derived from (62), underwent reduction of the subject NP and the time adverb. What the regrouping rule requires is the exact information as to which constituents have been deleted or will be deleted. The information as to which constituents will be deleted can be extracted from a conjoined structure before coordination reduction takes place. It is probably for this reason that Ross incorporates into his conjunction reduction rule a regrouping process that precedes anaphoric deletion. This regrouping process "Chomsky-adjoins to the right or the left of the coordinate node a copy of some constituent which occurs in all conjuncts, on a right or left branch respectively," (1967a: 175). Subsequently, the

[26] For a discussion of global constraints see Lakoff, 1970.

original node is deleted. If we apply Ross' rule to (62), only the subject John and the adverb are copied and Chomsky-adjoined, while if we applied it to (61a.), the subject, the adverb, and the object are copied. Ross' approach therefore avoids the above-discussed problem but it encounters some others. First, it seems intuitively wrong to order regrouping before coordination reduction as the reason for the existence of regrouping appears to be that it restores a constituent order which was interfered with by the application of coordination reduction. Furthermore, from a more formal point of view, the order regrouping--coordination reduction demands that we place certain constraints on the relation between these two rules. That is, deletion has to apply if regrouping did, and deletion cannot apply if regrouping did not apply. From this follows that we would not be able to account for the difference between sentences like (67a.) and (67b.)

(67) a. My father's house and my sister's were sold.

b. My father's and my sister's house were sold.

by assuming that (67a.) was derived by the application of deletion but not of regrouping, while (67b.) was derived by the application of both rules. If we assume that regrouping applies before deletion, only one of the above sentences[27] will be the output of the regrouping and deletion process, while the other sentence has to be generated by an additional movement rule. Enough evidence has, however, been presented earlier to reject such an approach to coordination reduction.

Another way of retaining information from an earlier stage of the derivation is the use of derivational constraints as proposed by Lakoff (1969).[28]

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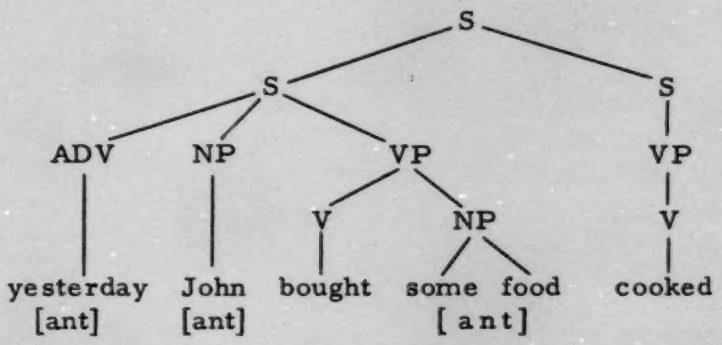
[27] Whether a sentence like (67a.) or like (67b.) would be the output of such a regrouping-deletion process would depend on the formulation of the rules.

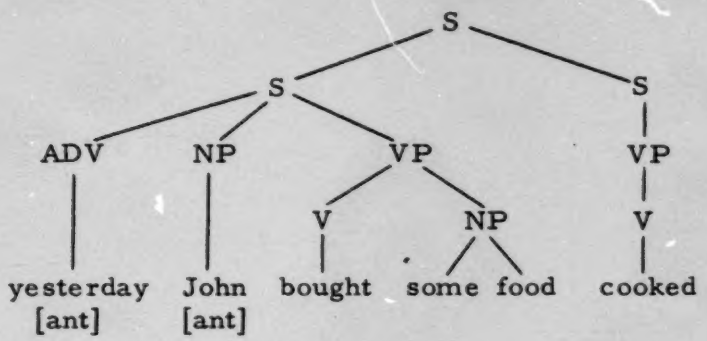
[28] Postal (1970) shows that such a constraint is required in the deletion of NP's by the Equi-NP deletion rule. That is, at the point where deletion has to apply the complement subject is no longer in the required configuration. Postal therefore suggests to mark the NP that is to be deleted by the feature [+doom]. The feature [doom] is, however, not suited for the problem under discussion as its use would greatly complicate the reduction process. It would, for instance, require that deletion applies in two steps, before regrouping to mark the deletable constituent, and after regrouping to eliminate the doomed constituent. Besides, regrouping would have to be formulated such that the rule checks for each constituent whether it has an identical counterpart marked [doom] in the other conjuncts before raising can take place.

Such constraints preserve information that would otherwise be lost in form of a feature. I therefore propose that the deletion rule marks the constituent that acted as antecedent by a special feature, i.e. [ant] and that the regrouping rule refers to this feature. Thus (60) above can be represented by two different phrase markers, namely (68a.) and (69a.) below, where (68a.) corresponds to (61) and (69a.) to (62).

(68) a.

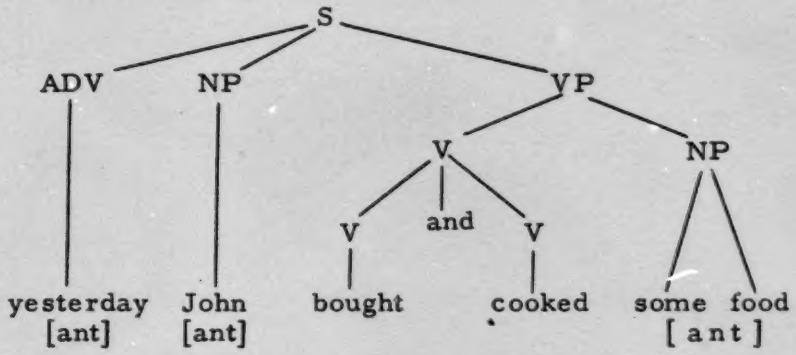


(69) a.

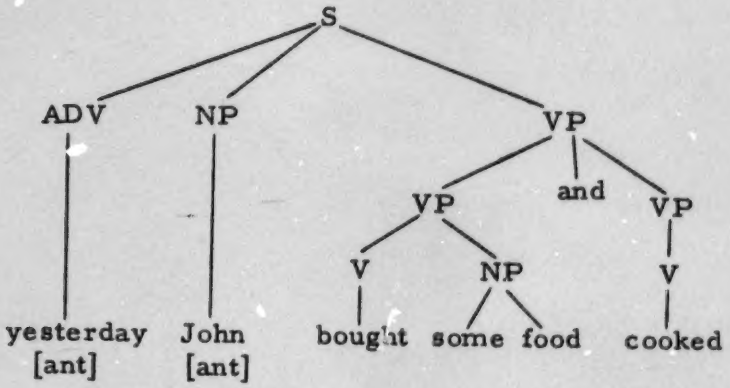


(68a.) can be regrouped to (68b.) below, while (69a.) can only be regrouped to (69b.)

(68) b.



(69) b.



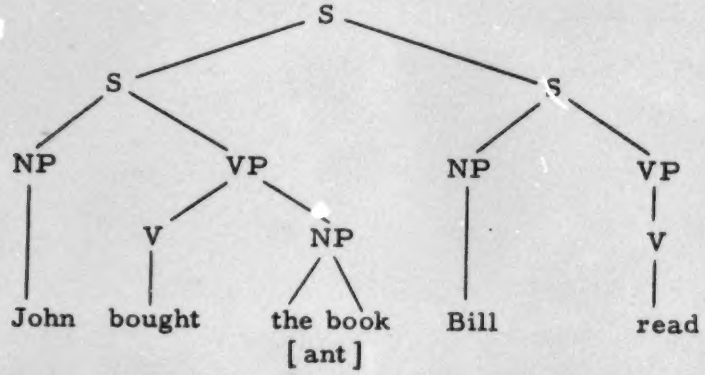
On the basis of the above discussion rule (45') is therefore revised to rule (45").

(45") Revised version

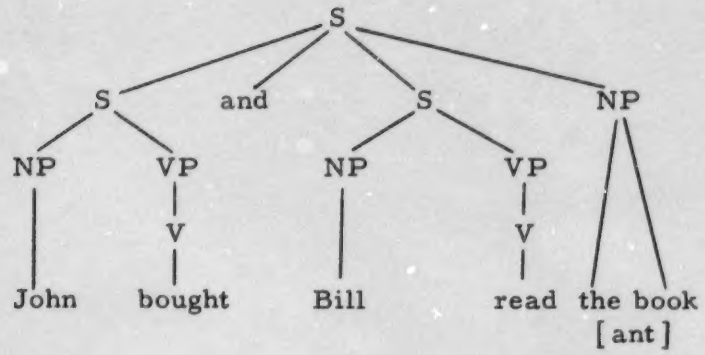
If after the formation of an A-over-A structure one of the constituents in the conjunct is marked [ant] and if this node is conjunct initial or conjunct final, raise that node and Chomsky-adjoin it to the coordinate node immediately to the right or the left of the conjunct nodes. The constituent is adjoined to the left if it is conjunct-initial, it is adjoined to the right if it is conjunct-final.

After having discussed in some detail the process of regrouping which involves the formation of an A-over-A structure and the raising of the antecedent constituent, I will now examine a slightly different reordering process, namely the one needed to generate respectively constructions. Thus, (70a.) below can be regrouped to (70b.) or to (69c.).

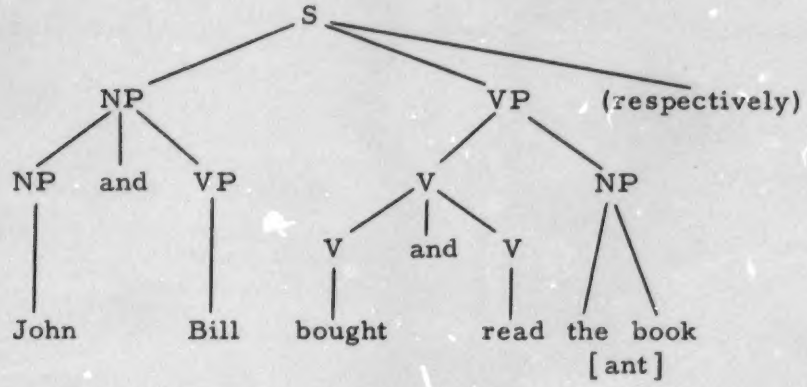
(70) a.



(70) b.



c.



(70c.) shows that respectively constructions violate one of the conditions stated in (45), namely that regrouping can only apply to the lowest constituent that exhaustively dominates all lexical nodes in the reduced conjunct. Thus, for regroupings that result in respectively sentences, the first part of the regrouping rule is less specific, i.e. (71).

(71) Chomsky-adjoin the constituent(s) of the reduced conjunct to the corresponding constituent in the unreduced conjunct.

Even though (71) is the less specific rule, it can result in more complex surface structures, which is probably the reason why some languages do not have a rule like (71) and why those which do have (71) reserve its use nearly exclusively for the written language. Among those languages that do not allow regrouping as specified in (71) are ARABIC, HAUSA and NAVAHO, while (71) is found in written HUNGARIAN, RUSSIAN (restricted), BENGALI (restricted), JAPANESE, FRENCH (very restricted), GERMAN and ENGLISH. As pointed out by Tai, respectively constructions can occur in ENGLISH even if reduction has not taken place, e.g. (72).

(72) John and Bill sailed and dived respectively.

This indicates that at least for ENGLISH (71) can be formulated even more generally, i.e. (71').

(71') Chomsky-adjoin the constituent(s) of a conjunct to the corresponding constituent of another conjunct.

A closer look at (71') reveals that it will generate sentences like (72) as well as sentences like (70b.) and (70c.), as no specific constraints are placed on the rule as to which constituent(s) may be Chomsky-adjoined. Thus, for languages with respectively constructions, we can stipulate a regrouping process that is subject to fewer constraints than the regrouping process in languages that do not have respectively constructions. However, if we want to characterize the difference between the spoken and the written language, then we have to assume that languages like ENGLISH have two regrouping processes, one for the spoken language which requires exhaustive dominance, (rule A below), and one for the written language, which does not have such a requirement (rule B below).

Rule A: regrouping (spoken language)

Chomsky-adjoin the constituent that exhaustively dominates all remaining constituents in the reduced conjunct to the corresponding node in the unreduced conjunct. If after the formation of the A-over-A structure, one of the constituents in the conjunct is marked [ant] and if this node is conjunct-initial or conjunct-final, raise that node and Chomsky-adjoin it to the coordinate node immediately to the right or the left of the conjunct nodes. The constituent is adjoined to the left if it is conjunct-initial, it is adjoined to the right if it is conjunct-final.

Rule B: regrouping (written language)

Chomsky-adjoin the constituent(s) of a conjunct to the corresponding constituents of another conjunct. If after the formation of the A-over-A structure, one of the constituents in the conjunct is marked [ant] and if this node is conjunct-initial or conjunct-final, raise that node and Chomsky-adjoin it to the coordinate node immediately to the right or the left of the conjunct nodes. The constituent is adjoined to the left if it is conjunct-initial, it is adjoined to the right if it is conjunct-final.

Concluding the discussion on regrouping, we can therefore say that regrouping is a reordering process that restores the order of constituents which was interfered with by the application of the deletion rule. In some languages the order which results from the application of the deletion rule is an acceptable surface order, in others it is not or only for certain structures and regrouping has to apply. This fact is accounted for by assuming that for the former languages regrouping is optional while for the latter it is only sometimes or never optional. By claiming that the reduction process only involves two rules, deletion and regrouping, and no additional movement rules, we can predict for all languages all of the surface orders of reduced coordinate structures, as there are only two choices:

(i) the surface order is identical with the output order of the deletion rule;

(ii) the surface order is identical with the output order of the regrouping rule.

The list below shows various input orders to the deletion rule which, given specific reductions, e.g. object reduction, can be converted into two possible output orders corresponding to (i) and (ii) above. Sometimes the order of constituents will be identical before and after regrouping, e.g. (d) subject reduction, as the list only reflects linear order and not dominance relations. None of the input orders below should have an output order not mentioned on the list.

Reduction Patterns

a. Verbal reduction (trans.)

input to delet. r.	VSO + VSO	SVO + SVO	SOV + SOV
output of delet. r.	VSO + SO	SVO + S O	SOV + SO
output of regrpg. r.	----------	----------	SO + SOV

b. Verbal reduction (intrans.)

input to delet. r.	VS + VS	SV + SV
output of delet. r.	VS + V	SV + S
output of regrpg. r.	V + VS	S + SV

c. Object reduction

input to delet. r.	VSO + VSO	SVO + SVO	SOV + SOV
output of delet. r.	VSO + VS	SVO + SV	SOV + S V
output of regrpg. r.	VS + VSO	SV + SVO	----------

d. Subject reduction

input to delet. r.	VSO + VSO	SVO + SVO	SOV + SOV
output of delet. r.	VSO + V O	SVO + VO	SOV + OV
output of regrpg. r.	----------	SVO + VO	SOV + OV

e. Subject-verb reduction

input to delet. r.	VSO + VSO	SVO + SVO	SOV + SOV
output of delet. r.	VSO + O	SVO + O	SOV + O
output of regrpg. r.	VSO + O	SVO + O	SO + OV

f. Object-verb reduction

input to delet. r.	VSO + VSO	SVO + SVO	SOV + SOV
output to delet. r.	VSO + S	SVO + S	SOV + S
output to regrpg. r.	VS + SO	S + SVO	S + SOV

g. Subject-object reduction

input to delet. r.	VSO + VSO	SVO + SVO	SOV + SOV
output to delet. r.	VSO + V	SVO + V	SOV + V
output to regrpg. r.	V + VSO	SV + VO	SOV + V

h. Adjective reduction

input to delet. r.	AN + AN	NA + NA
output to delet. r.	AN + N	NA + N
output to regrpg. r.	AN + N	N + NA

i. Noun reduction

input to delet. r.	AN + AN	NA + NA
output to delet. r.	AN + A	NA + A
output to regrpg. r.	A + AN	NA + A

It was said above that a reduction form that does not appear on the chart is predicted to not exist in a natural language. However, there is one reduced structure which I found in HINDI and which is not on the list, namely object reduction resulting in a SV + SOV surface order. In HINDI object reduction can take two forms, namely the one above and the one in the chart, i.e. SOV + SV.

(72) a. Jon-ne safarchand kharida aur Bill-ne safarchand khaya.
"John apple bought and Bill apple ate"
'John bought an apple and Bill ate the apple.'

b. Jon-ne safarchand kharida aur Bill-ne khaya.
"John apple bought and Bill ate"
'John bought and Bill ate an apple.'

c. Jon-ne kharida aur Bill-ne safarchand khaya.
"John bought and Bill apple ate"
'John bought and Bill ate an apple.'

Reduced structures as in (72c.) are not generated by the rules as proposed in this paper, while (72b.) is the output of the deletion rule. One way of generating (72c.) is to assume that HINDI has an object-movement rule which optionally moves the object from the first, the unreduced conjunct, to the second, the reduced conjunct. Such a rule would however be totally ad hoc and therefore must be rejected. Another way to account for the HINDI data is to assume that HINDI is an underlying SVO language and that it has an obligatory object preposing rule, resulting in the following two derivations for object-reduced sentences in HINDI.

(73)	SVO + SVO	SVO + SVO
deletion (opt.)	SVO + SV	SVO + SV
regrouping (opt.)	SV + SVO	----------
object preposing (obl.)	SV + SOV	SOV + SV

The claim that HINDI is an underlying SVO language was made by Ross as well as by Koutsoudas. They had to make this assumption to account within their framework for the occurrence of split coordination in HINDI. Some evidence to support the claim that HINDI is an underlying SVO language is provided by typological facts observed by Koutsoudas.

> "It was found that a definite generalization seems to exist regarding the above two properties of objects, namely a language allows split coordination of objects if and only if it allows both SVO type sentences and SOV type sentences. GERMAN, MODERN GREEK, RUSSIAN, and TURKISH are examples of languages that behave exactly like HUNGARIAN with regard to the two properties in question; ENGLISH, JAPANESE, NORWEGIAN, and INDONESIAN are, on the other hand, examples of languages in which there are no split coordination of objects and in which there are either SVO type sentences or SOV type sentences but not both." (1971: 371)

HINDI is an exception to this generalization as it allows split object coordination but no SVO surface order.

2. Constraints on coordination reduction

After having discussed the process of regrouping, we will now investigate certain constraints that have to be placed on the coordination reduction process. These constraints are not expected to be universal, but are assumed to be based on universal principles. Constraints on coordination reduction can be either syntactic or semantic. In the former case, constraints have to be imposed to prevent the generation of ungrammatical surface forms, while in the latter case constraints are imposed to prevent that the reduction process brings about a change in meaning. A clear example of a syntactic constraint is found in CHIPPEWA where regrouping cannot take place under certain conditions. In CHIPPEWA the object and the verb agree with respect to animacy and number, e.g. (74), and regrouping appears to be obligatory for most types of constituent.

(74) jīmān indayān
"a boat (inan., sing.) I have (inan., sing.)"
'I have a boat.'

If two inanimate or two animate objects are conjoined, regrouping takes place, i.e. (75a.) can be reduced to (75b.) and is regrouped to (75c.).

(75) a. jīmān indayān mīnawā abwi indayān.
"a boat (inan., sing.) I have (inan., sing.) and a paddle (inan., sing.) I have (inan., sing.)"
'I have a boat and I have a paddle.'

b. jīmān indayān mīnawā abwi.
"a boat I have and a paddle."
'I have a boat and a paddle.'

c. jīmān mīnawā abwi indayānan.
"a boat and a paddle I have (inan., pl.)
'I have a boat and a paddle.'

A similar paradigm can be put together for two animate objects. However, regrouping as in (75c.) is blocked if the two objects differ in animacy, as neither the animate nor the inanimate marking can be neutralized and regrouping would result in conflicting markings on the verb. Thus (76a.) below can be reduced to (76b.), but (76b.) cannot be regrouped to (76c.) or (76d.).

(76) a. jīmān indayān mīnawā akik indayāwa.
"a boat (inan., sing.) I have (inan., sing.) and a pail (an. sing.) I have (an., sing.)"
'I have a boat and a pail.'

b. jīmān indayān mīnawā akik.
"a boat I have and a pail."
'I have a boat and a pail.'

c. *jīmān mīnawā akik indayānan.
"a boat and a pail I have (inan., pl.)"

d. *jīmān mīnawā akik indayāwāg.
"a boat and a pail I have (an., pl)"

Based on the universal principle of ranking, Delisle (1972) explains the above data by demonstrating that in CHIPPEWA animate and inanimate are equally ranked, i.e. neither of these features can neutralize in a conjunction and regrouping therefore has to be avoided. Contrary to CHIPPEWA, FRENCH allows the neutralization of features and regrouping is obligatory in the following example.

(77) a. La petite fille est belle et le petit garçon est beau.
"The little girl is pretty (fem., sing.) and the little boy is pretty (masc., sing.)"

delet. b. *La petite fille est belle et le petit garçon.
"The little girl is pretty and the little boy."

regr. c. La petit fille et le petit garçon sont beau.
'The little girl and the little boy are pretty (masc., pl.).'

In (77c.) a [fem] and a [masc] noun are grouped together and marking on the predicate adjective is [masc]. This implies that in FRENCH the feature [fem] is neutralized if brought into conjunction with a [masc] marking.

Another instance where regrouping cannot apply is found in CLASSICAL ARABIC where finite verbs cannot be conjoined. In CLASSICAL ARABIC a verb that precedes the subject is always marked for singular, while a verb that follows the subject agrees with it in number, e.g. (78).

(78) akala al-awlād wa sharibū.
"ate (masc. sing.) the boys (masc., pl.) and drank (masc., pl.)"
'The boys ate and drank.'

(78) cannot undergo regrouping, possibly because of the different specifications on the verbs. That the verb specifications play a role in blocking the application of regrouping is supported by COLLOQUIAL ARABIC where both verbs agree in number with the subject and where regrouping can take place, e.g. (79).

(79) l-wulād akalū wu sheribū mudda ṭawīla.
"the boys ate (masc., pl.) and drank (masc., pl.) period long"
'The boys ate and drank for a long time.'

Above we have examined some syntactic constraints on regrouping. In the following, we will investigate some semantic constraints that either block or require regrouping. Given two sentences with identical lexical items and different word orders, there are two logical possibilities: either the difference in word order signals a difference in meaning or it doesn't. Thus in (80) below, there appears to be no difference in meaning between the a. and the b. version, while there definitely is a difference between (81a.) and (81b.).

(80) a. Joe picked up the telephone.
b. Joe picked the telephone up.

(81) a. Mary loves Bill.
b. Bill loves Mary.

Consequently, if a language has two surface orders for a given reduced sentence, we would expect that in some languages the difference in word order corresponds to a difference in meaning while in others it doesn't. We should furthermore expect that if the difference in word order reflects a meaning difference, this meaning difference does not necessarily have to be the same from language to language. An example where regrouping does

not change the meaning is found in GERMAN sondern 'but rather' conjunctions. (82a.) below which has not been regrouped is a paraphrase of the regrouped (82b.).

(82) a. Nicht Hans ist angekommen sondern Mary.
"Not Hans is arrived but Mary"
'It wasn't Hans who arrived but Mary.'

b. Nicht Hans sondern Mary ist angekommen.
"Not Hans but Mary is arrived"
'Not Hans but Mary arrived.'

However, in and conjunctions in GERMAN the non-regrouped sentence often has a slightly different interpretation than the regrouped sentence. This is also true for ENGLISH as the following example shows.

(83) a. John bought a book at the store, and a newspaper.

b. John bought a book and a newspaper at the store.

In (83a.) and a newspaper is added as an afterthought, it is somehow ranked lower, considered less important information. The idea of afterthought is even more stressed if we insert an also.

(83) c. John bought a book at the store, and also a newspaper.

In some languages the use of a morpheme denoting also is required if regrouping did not take place, e.g. JAPANESE.

(84) a. Toyo wa ringo o katta, banana mo.
"Toyo subj-marker apple obj-marker bought, banana also"
'Toyo bought an apple, and a banana.'

b. *Toyo wa ringo o katta, to banana.
"Toyo subj-marker apple obj-marker bought, and banana"

While in languages like JAPANESE an afterthought is always clearly marked, this is not true in languages like ENGLISH. We cannot say, for instance, that whenever regrouping did not apply, all constituents that follow the conjunction are part of an afterthought. In both of the examples below regrouping did not apply, but neither (86b.) nor (87b.) necessarily imply that the reduced conjunct is meant as an afterthought.

(86) a. John bought a record and Bill bought a guitar.

delet. b. John bought a record and Bill a guitar.

(87) a. Hans hat einen Apfel gekauft, und Peter hat eine Banane gekauft.
"Hans has an apple bought, and Peter has a banana bought"
'Hans has bought an apple and Peter has bought a banana.'

delet. b. Hans hat einen Apfel gekauft und Peter eine Banane.
"Hans has an apple bought and Peter a banana"
'Hans has bought an apple and Peter a banana.'

However, both (86b.) and (87b.) differ from sentences like (83a.) in that the former cannot be regrouped while the latter can be regrouped to (83b.). A tentative hypothesis therefore is that if in an and conjunction the structural description of the regrouping rule is met and the rule does not apply, then the resulting sentence contains an afterthought. This seems to be true for ENGLISH and for GERMAN, but it is probably not true for a language like HAUSA where the distinction between a regrouped and a non-regrouped sentence is used to signal a different kind of distinction.

(88) a. Audu ya zo dà Bella.
"Audu he came with Bill"
'Audu and Bill came.'

b. Audu dà Bella sun zo.
"Audu with Bill they came"
'Audu and Bill came.'

(88a.) means that Audu came and he brought Bill, while (88b.) means that Audu and Bill came together.

Similar to HAUSA, an and conjoined subject in NAVAHO always implies togetherness. Thus (89) can only mean 'John and Mary arrived together.'

(89) John do Mary niaz.
'John and Mary arrived.'

If the speaker intends to indicate that they did not arrive together, he will not reduce the second occurrence of the verb.

Above we briefly discussed some conditions under which regrouping has to be blocked for syntactic or semantic reasons. In the following we will investigate why regrouping is so often obligatory and why deletion cannot take place under certain circumstances. It will be argued that regrouping is a restructuring process that affects the linear order of constituents and their dominance structure in order to restore the functional relations that existed within a given sentence before deletion applied. It will furthermore be argued that if the output order of the deletion rule is such that regrouping cannot bring about the required structure, deletion has to be blocked.

When deletion applies as specified in rule (35), it deletes a constituent which has a certain material and relational content. However, as deletion can only take place under identity, this content is still preserved in the antecedent constituent which now has to extend its function to also encompass that of the deleted constituent. For instance, if in (90a.) below the second adverb is deleted, the remaining adverb in (90b.) has to extend its range over both verbs.

(90) a. John quickly walked home and John quickly ran upstairs.

delet. b. John quickly walked home and ran upstairs.

In (90b.) the adverb is in such a position that it does not have to be moved in order to be in relation with both verbs. However, this is not the case if the adverbis in verbphrase-final position as in (91b.). In that case the adverb has to be moved into such a position that its range extends over both verbs as in (91c.).

(91) a. John ate greedily and John drank greedily.

delet. b. *John ate greedily and drank.

regr. c. John ate and drank greedily.

Thus it appears that in ENGLISH a manner adverb which is dominated by a verbphrase can range over one or several verbs that either precede or follow the adverb, but it cannot range over a preceding and a following verb at the same time as (91b.) is not a paraphrase of (91a.). Similar constraints hold for objects in ENGLISH. (92a.) has to be reordered to (92c.), as a

noun can only be the direct object of a verb if it is placed to the right of that verb.[29]

(92) a. Fred borrowed a book and Fred read the book.

delet. b. *Fred borrowed the book and read.

regr. c. Fred borrowed and read the book.

While ENGLISH nouns can only be in a direct object relation with a verb if that verb precedes, RUSSIAN nouns have no such constraint. In RUSSIAN an object can either precede or follow a verb which allows for SVO and SOV surface orders. Thus (93a.) can either be reduced to (93b.) or to (93c.). In both cases the object is within the range of both verbs.

(93) a. Vanja kupil jabloko, a Maša s"ela jabloko.
"Vanya bought apple, and Masha ate apple"
'Vanya bought an apple and Masha ate an apple.'

b. Vanja kupil jabloko a Maša s"ela.
"Vanya bought apple and Masha ate"
'Vanya bought and Masha ate the apple.'

c. Vanja kupil, a Maša s"ela jabloko.
"Vanya bought, and Masha ate apple"
'Vanya bought and Masha ate an apple.'

That RUSSIAN relies less on word order to specify relations between constituents than ENGLISH is reflected in the fact that in RUSSIAN regrouping is optional. In a language like ENGLISH, on the other hand, where order is the main method for relating constituents, regrouping plays a much more important role.

Up to now I have presented data to justify the claim that the regrouping rule moves constituents under certain conditions. These conditions can vary from language to language and from constituent type to constituent type. It was argued that the regrouping rule has to influence the linear order of constituents to restore functional relations which existed before the application of deletion. However, the regrouping rule as specified in this paper not only influence the linear order of constituents, it can also change the existing dominance relations by raising the antecedent constituent to the coordinate node. It is claimed that raising is a necessary process to account for certain

[29] I am disregarding the fact that direct objects can occur to the left of verbs in some instances, for instance after topicalization.

syntactic facts. Consider the following argument. In GERMAN, adverbs that follow the verb have the same constraints as their ENGLISH counterparts, that is, their range is restricted to one or several preceding verbs. Thus (94b.) has to undergo regrouping if a paraphrase of (94a.) is to be generated.

(94) a. Hans aß gierig und Hans trank gierig.
"Hans ate greedily and Hans drank greedily."

b. *Hans aß gierig und trank.
"Hans ate greedily and drank."

c. Hans aß und trank gierig.
"Hans ate and drank greedily."

In (94c.) the adverb ranges over two preceding verbs. This is, however, not true in a sentence like (95b.) below, that is (95b.) is not a possible reduction of (95a.), even though both verbs precede the adverb.

(95) a. *Hans aß gierig den Apfel und Hans trank gierig den Wein.
"Hans ate greedily the apple and Hans drank greedily the wine"
'Hans greedily ate the apple and Hans greedily drank the wine.'

b. *Hans aß den Apfel und trank gierig den Wein.
"Hans ate the apple and drank greedily the wine"
'Hans ate the apple and greedily drank the wine.'

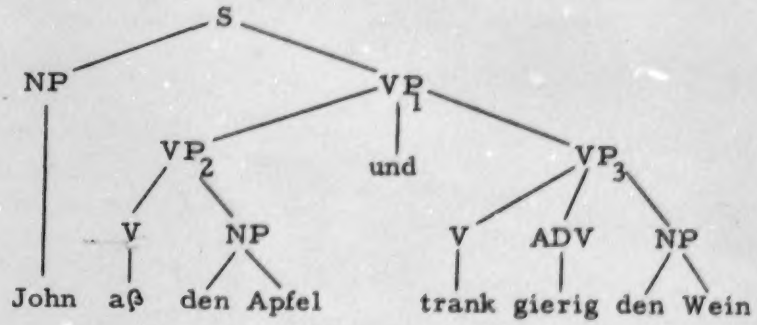
One possible hypothesis is that the adverb cannot range over the verb in the first conjunct because of the intervening object. But this is not so, as in (96) below the range of the adverb extends over the object to the verb.

(96) Hans aß das Fleisch gierig.
"Hans ate the meet greedily."

It therefore appears that not only the linear order may influence the scope of a constituent, i.e. in ENGLISH an adverb in verbphrase-final position may only range over preceding but not over following verbs, but that the range of an adverb and of any other constituent type is influenced by its dominance structure. In GERMAN the scope of manner adverbs is limited by the constituent that immediately dominates it. In other words, manner adverbs can only range over those constituents which are dominated -- though not necessarily immediately -- by the same constituent that immediately dominates the adverb. In (95b.) the adverb is immediately dominated by a conjunct VP node which does not dominate the other conjunct VP as the P-marker below shows,

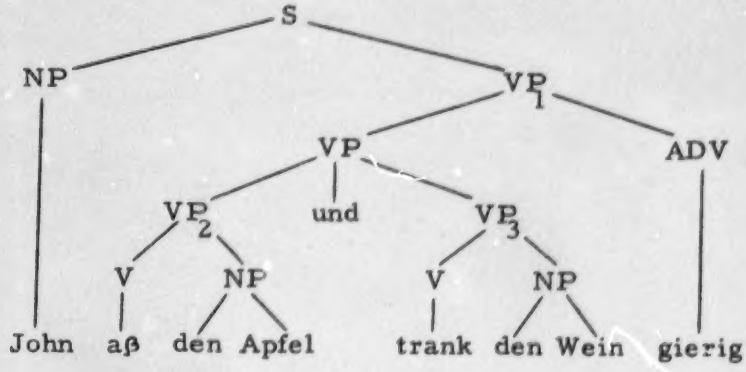
and consequently the adverb in VP_3 cannot range over the verb in VP_2.

(95) b'



In order for the adverb to extend its scope to the verb in VP_2 above, it would have to be immediately dominated by the coordinate node, i.e. VP_1, as in (97) below, where (97) represents a paraphrase of (95a.).

(97)



Thus we can say that in GERMAN the scope of a manner adverb is upward-bounded by the node that immediately dominates it. The same constraint also holds for ENGLISH manner adverbs.[30] (98a.) below cannot be reduced to (98b.) as the adverb is immediately dominated by a VP that does not dominate the VP in the second conjunct. However, if the adverb is sentence-initial and is Chomsky-adjoined to the coordinate node as in (99), then the adverb ranges over both verbs.

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[30] While a manner adverb is upward-bounded by the constituent that immediately dominates it, this is not true for a time adverb, which can extend its scope to the S-node even if that node does not immediately dominate it. For instance, b. below is a possible reduction of the a. sentence.

a. John read a book last night and Barbara played a record last night.
b. John read a book last night and Barbara played a record.

See also discussion below.

(98) a. John quickly ran upstairs and Bill quickly closed the doors.

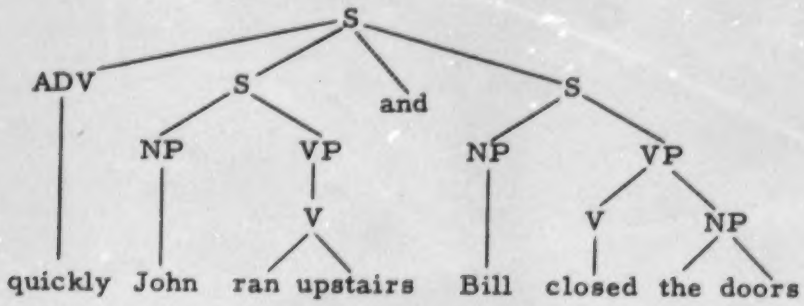
b. *John quickly ran upstairs and Bill closed the doors.

(99) a. Quickly John ran upstairs and quickly Bill closed the doors.

b. Quickly John ran upstairs and Bill closed the doors.

The P-marker that corresponds to (99b.) is (100).

(100)



The constraints that were established for ENGLISH and GERMAN manner adverbs also seem to hold for manner adverbs in MANDARIN CHINESE.

(101) a. Yohàn hěn-hsung-de dǎ-le nà nán-hái-tze, Bill hěn-hsung-de dǎ-le nà nyŭ-hai-tze.
"John furiously hit-past part. that boy, Bill furiously hit-past part. that girl"
'John furiously hit that boy, Bill furiously hit that girl.'

b. *Yohàn hěn-hsung-de dǎ-le nà nán-hái-tze, Bill dǎ-le nà nyŭ-hái-tze.
"John furiously hit-past part. that boy, Bill hit-past part. that girl.'

In RUSSIAN, on the other hand, the scope of manner adverbs is less restricted, i.e. the scope of the adverb is not upward-bounded by the constituent that immediately dominates it but seems to be identical to the scope of time adverbs which are upward-bounded by the S node. (102a.) below can be reduced to (102b.).

(102) a. Ivan žadno el pirog, a Boris žadno pil vino.
"Ivan greedily ate the pie, and Boris greedily drank the wine."

delet. b. Ivan žadno el pirog, a Boris pil vino.
"Ivan greedily ate the pie, and Boris drank the wine."

Thus, while in RUSSIAN a manner adverb can be deleted independent of its position in the sentence, this is not true for ENGLISH, GERMAN and MANDARIN CHINESE. These languages consequently need a constraint which

prevents the anaphoric deletion of manner adverbs in sentences like (94a.), (98a.), and (101a.) respectively. The constraint has to take into account the constituent type that is to be deleted and the position of the constituent within the sentence before deletion. The constituent type has to be taken into account because each type has its own scope, for instance in ENGLISH time adverbials have a scope that differs from that of manner adverbials. The position, on the other hand, is essential because it determines whether or not regrouping can take place. Thus if the input to the deletion rule is not (99a.) but (103a.) below, regrouping can raise the adverb and place it into a position where both verbs are within its scope.

(103) a. $[_S [_S$ John $[_{VP}$quickly ran down the stairs]]] and $[_{VP}$quickly closed the door]]]

delet. b. $[_S [_S$John $[_{VP}$quickly ran down the stairs]] and $[_S[_{VP}$closed the door] ;]

regr. c. $[_S$John $[_{VP}$quickly $[_{VP} [_{VP}$ran down the stairs] and $[_{VP}$closed the door]]]

The following data from GERMAN provides further support for the claim that constraints on deletion are tied in with whether or not regrouping can apply to the output of the deletion rule and can rearrange the sentence in such a way that it is identical to the input sentence.

(104) a. Hans kaufte den Apfel und Peter aß den Apfel.
"Hans bought the apple and Peter ate the apple."

delet. b. *Hans kaufte den Apfel und Peter aß .
"Hans bought the apple and Peter ate"

regr. c. Hans kaufte und Peter aß den Apfel.
"Hans bought and Peter ate the apple."

(105) a. Hans hat den Apfel gekauft und Peter hat den Apfel gegessen.
"Hans has the apple bought and Peter has the apple eaten."
'Hans has bought the apple and Peter has eaten the apple.'

delet. b. *Hans hat den Apfel gekauft und Peter hat gegessen.
"Hans has the apple bought and Peter has eaten"

(104a.) and (105a.) differ in two aspects, namely in their tense and in the position of the constituents. It appears rather unlikely that a constraint on deletion can be directly correlated with a tense difference, but indirectly the tense

difference is responsible for the constraint, as in GERMAN the tense difference happens to involve an order difference. While in (104) the object is in sentence-final position, this position is taken in (105) by the past participle. From this follows that regrouping cannot apply to (105b.) and the object cannot be brought within the scope of both verbs. Even if we reformulate the regrouping rule so that it would apply to (105b.) and would raise the object, the resulting sentence would be ungrammatical, as there is no position which would fulfill the following two requirements: a) to be a position in which objects can occur, and b) to be a position which allows the object to be within the scope of both verbs.[31]

Up to now it has been argued that if we assume the principle of scope, we can account for certain constraints on deletion, and it has also been argued that scope has a horizontal or linear, and a vertical or dominance dimension. In the following it will be shown that the assumption that scope is upward-bounded allows us to account for the fact that in a language like CHINESE certain reductions are ungrammatical, while the corresponding reductions in a language like ENGLISH result in acceptable surface forms. The first to investigate these constraints were Sanders and Tai (1972) who assumed that certain languages are subject to the Immediate Dominance Condition on deletion while other languages are not. Sanders and Tai had observed that all languages seem to allow the deletion of an identical subject or predicate in a coordinate structure, but that languages like ENGLISH and languages like CHINESE differ in that the former allow the deletion of objects and verbs while the latter do not. Thus, in CHINESE (106a.) and (107a.) cannot be reduced to (106b.) and (107b.) respectively, while the ENGLISH glosses are grammatical.

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[31] This statement is oversimplified as the object could be topicalized resulting in:

Den Apfel hat Hans gekauft und Peter gegessen.
"The apple has Hans bought and Peter eaten"
'The apple Hans has bought and Peter eaten.'

Whether or not topicalized sentences like the above can be related to conconstraints on regrouping will have to be further investigated.

(106) a. Yohàn dǎ-le nán-hái-tze, Bill dǎ-le nyǔ-hái-tze.
"John hit-past part. boy, Bill hit-past part. girl"
'John hit the boy, and Bill hit the girl.'

b. *Yonàn dǎ-le nán-hái-tze, Bill nyǔ-hái-tze.
"John hit-past part. boy, Bill girl"
'John hit the boy, and Bill the girl.'

(107) a. Yohàn dǎ-le nán-hái-tze, Bill ti-le nán-hái-tze.
"John hit-past part. boy, Bill kick-past part. boy"
'John hit the boy, and Bill kicked the boy.'

b. *Yohàn dǎ-le, Bill ti-le nán-hái-tze.
"John hit-past part., Bill kick-past part. boy"
'John hit and Bill kicked the boy.'

In order to account for the ungrammaticality of sentences like (106b.) and (107b.) Sanders and Tai propose the non-universal Immediate Dominance Condition (henceforth IDC) which says that there exists a "restriction against the deletion of any constituent which is not immediately dominated by a conjunct sentence " (p.165). This condition is part of the grammar of languages like CHINESE, HAUSA, LEBANESE ARABIC, etc. while it is not found in the grammar of languages like ENGLISH, JAPANESE, GERMAN and RUSSIAN. Thus, by setting up a condition like the IDC, Sanders and Tai aim to achieve two objectives, namely to account for constraints on deletion in languages like MANDARIN CHINESE, and to provide a "systematic explanation of various differences between languages like MANDARIN CHINESE and languages like ENGLISH" (p.161). Below it will be argued that even though the IDC seems to account for most of the data, it fails to account for some crucial cases. It will also be argued that by claiming that constraints on deletion are governed by language-specific conditions, we draw a dividing line between languages like ENGLISH and languages like CHINESE which is not empirically justified and which prevents us from discovering a more general principle. The sets of sentences below contain data from ENGLISH and MANDARIN CHINESE. A comparison reveals that constraints on object and verb deletion are nearly identical for both languages, the only exception being (109b.) and (113b.) where the CHINESE counterpart of the ENGLISH sentence is ungrammatical.

ENGLISH:

(108) a. John bought the book and John read the book.

b. John bought and read the book.

(109) a. John bought the book and Bill read the book.

b. John bought and Bill read the book.

(110) a. I gave my mother a book and John gave my mother a record.

b. *I gave my mother a book and John a record.[32]

c. I gave my mother a book and John gave a record.

(111) a. John gave a book to my mother, and I gave a book to my father.

b. *John gave a book to my mother, and I gave to my father.

CHINESE:

(112) a. Yohàn mǎi-le nài bĕn shu, Yohàn kàn-le nài bĕn shu.
"John buy-past that classifier book, John read-past that classifier book"
'John bought that book, John read that book.'

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[32] It has been claimed (cf. Hankamer (1971)), that a sentence like (110a.) is ungrammatical because it is ambiguous as to whether it was derived from (1) or from (2) below.

(1) I gave my mother a book and John gave my mother a record.

(2) I gave my mother a book and I gave John a record.

But, even in GERMAN where case markings disambiguate the sentence, a reduction as in (110b.) is ungrammatical.

(3) *Ich gab meiner Mutter ein Buch und mein Vater eine Schallplatte.
"I gave my mother a book and my father a record."

However, I am not sure at present on the basis of which principle the generation of a sentence like (110b.) can be excluded. It does not seem to be scope, as in ENGLISH a verb can extend its scope into another sentence, e.g.

(4) Bill bought an apple and John a banana.

That the principle is not avoidance of ambiguity is supported by the above data from GERMAN, and also by the fact that if we remove the ambiguity in the ENGLISH sentence, the resulting sentence is still ungrammatical.

(5) *I gave my mother a book and Bill my mother a record.

However, if the indirect object in the first conjunct is constrasted with another indirect object, then the resulting sentence is acceptable.

(6) I gave my mother a book and Bill my father a record.

(112) b. Yohàn mǎi-le, yiěh kàn-le nài bĕn shu.[33]
"John buy-past, also read-past that classifier book"
'John bought and read that book.'

(113) a. Yohàn mǎi-le nài bĕn shu, Bill kàn-le nài bĕn shu.
"John buy-past that classifier book, Bill read-past that classifier book"
'John bought that book, and Bill read that book.'

b. *Yohàn mǎi-le, Bill kàn-le nài bĕn shu.
"John buy-past, Bill read-past that classifier book"
'John bought, and Bill read that book.'

(114) a. Wŏ gĕi-le wŏ mama yì bĕn shu, Yohàn gĕi-le wŏ mama yì chang ch'àng-pièn.
"I give-past my mother one classifier book, John give-past my mother one classifier record"
'I gave my mother a book, and John gave my mother a record.'

b. *Wŏ gĕi-le wŏ mama yì bĕn shu, Yohàn yì chang ch'àng-pièn.
"I give-past my mother one classifier book, John one classifier record"
'I gave my mother a book, and John a record.'

c. Wŏ gĕi-le wŏ mama yì bĕn shu, Yohàn gĕi-le yì chang ch'àng-pièn.
"I give-past my mother one classifier book, John give-past one classifier record"
'I gave my mother a book, and John gave a record.'

(115) a. Yohàn gĕi-le wŏ mama yì bĕn shu, wŏ gĕi-le wŏ bàba yì bĕn shu.
"John give-past my mother one classifier book, I give-past my father one classifier book"
'John gave my mother a book, and I gave my father a book.'

b. *Yohàn gĕi-le wŏ mama, wŏ gĕi-le wŏ bàba yì bĕn shu.
"John give-past my mother, I give-past my father one classifier book"
'John gave my mother, and I gave my father a book.'

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[33] Sanders and Tai claimed that verbal conjunction as in (112b.) above is not possible in CHINESE, which presented a problem for their analysis as the IDC could not account for this constraint. However, verbal conjunction is grammatical in MANDARIN if yiĕh 'also' is inserted. What MANDARIN does not allow is the direct juxtaposition of two finite verbs which occurs if yiĕh is not inserted as MANDARIN does not have a conjunction corresponding to the ENGLISH and.

(1) a. Yohàn hsìao-le, yiĕh wŭ-le.
"John laughed, also danced"
'John laughed and danced.'
b. *Yohàn hsìao-le, wŭ-le.
"John laughed, danced"

(2) a. Yohàn dă-le, yiĕh ti-le nán-hái-tze
"John hit, also kicked boy"
'John hit and kicked the boy.'
b. *Yohàn dă-le, ti-le nán-hái-tze.
"John hit, kicked the boy"

Problematic for Sanders' and Tai's analysis is the grammaticality of (114c.) which, according to the IDC should be ungrammatical. It should be ungrammatical because at no time during the derivation is the indirect object immediately dominated by a conjunct node, which is the condition for deletion stipulated by the IDC. A similar problem is found in BENGALI. While spoken BENGALI seems to stay within the constraints imposed by the IDC, written BENGALI allows the deletion of a verb even if that verb is not immediately dominated by a conjunct node.

(116) a. John ekta kola kinlo ar Bill ekta aapel kinlo.
"John a banana bought and Bill an apple bought"
'John bought a banana and Bill bought an apple.'

b. John ekta kola ar Bill ekta appel kinlo.
"John a banana and Bill an apple bought"
'John bought a banana and Bill an apple.'

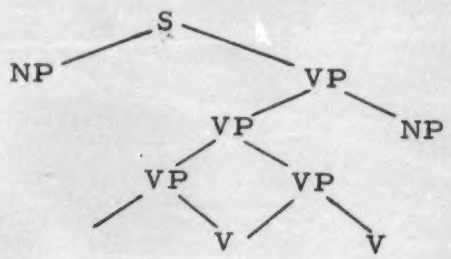
The fact that sentences like (116b.) are found in written but not in spoken BENGALI indicates that it is a performance or functional constraint rather than a formal one like the IDC which excludes sentences like (116b.) from spoken BENGALI.

On the basis of the data presented above we can say that Sanders and Tai fail to accomplish their two objectives, namely to account for <u>all</u> of the constraints on deletion in languages like CHINESE, and to systematically explain the differences between languages like CHINESE and languages like ENGLISH. The former objective is not achieved because Sanders' and Tai's hypothesis cannot account for the grammaticality of sentences like (114c.) and (116b.), which the IDC predicts to be ungrammatical. The latter objective is not achieved, because even though Sanders' and Tai's hypothesis accounts for the fact that a sentence like (109b.) is grammatical in ENGLISH but not in MANDARIN (i.e. (113b.)), their hypothesis does not account for the similarities between languages like ENGLISH and languages like CHINESE. For instance, Sanders' and Tai's approach forces us to assume that the ungrammaticality of (111b.) and of the corresponding (115b.) is due to unrelated principles, even though the environments in which the deletion of the object is constrained seem to be identical. Below I will show that we can account for these similarities by assuming that ENGLISH and CHINESE, like all

other languages, are subject to the universal principle of scope, and I will also show that we can account for the differences by assuming that the scope of a given constituent type is upward-bound and that the boundaries may differ from language to language.

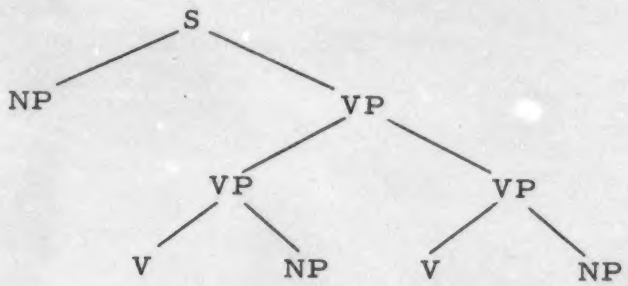
If an object is deleted in a SVO language and if regrouping takes place, the object is raised to a higher node. This implies that if the object is to be within the scope of the verb, this scope cannot be upward-bound by the node that immediately dominates the verb, i.e. if (117) below represents a grammatical surface form, both verbs have to have the raised object NP within their scope.

(117)

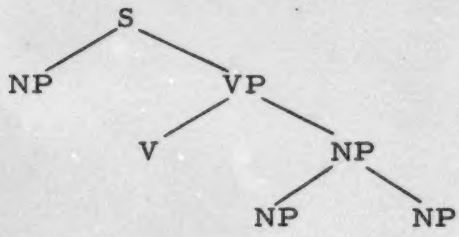


Structures like (117) are grammatical in all languages investigated by me. However, there is some evidence that there are languages in which a reduction as in (117) is ungrammatical. According to Sanders and Tai MANDARIN CHINESE is one of these languages, but sentences like (112b.) contradict their statement. Other languages that do not allow a structure like (117) are listed by Koutsoudas (1971: 346). Assuming that this list is correct, we can then state that in these languages the scope of a verb is upward-bound by the node that immediately dominates the verb. This constraint excludes sentences with a structure like (117) but permits sentences with a structure like (118) and (119).

(118)

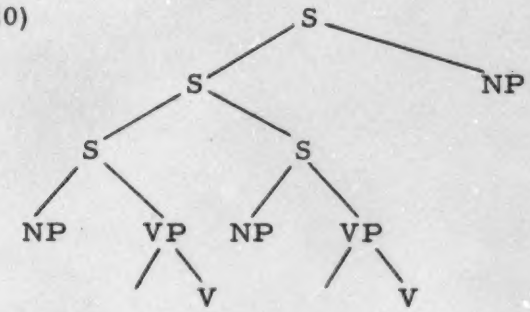


(119)



If an object has been deleted but not a subject, that is if the conjunct nodes are S nodes, regrouping has to raise the antecedent constituent to the coordinate S node, which results in a structure like (120) below.

(120)



(120) implies that the verbs have to extend their scope beyond the S node that dominates it into a higher S. This is not possible in languages like MANDARIN CHINESE, NAVAHO, and spoken BENGALI, while sentences with a structure like (120) are accepted in ENGLISH, GERMAN and written BENGALI. However, even in these languages sentences like the ones below are considered marginal by many speakers and are mostly used in writing if at all.

(121) John bought and Bill read the book.

(122) ?John bought his mother and Bill bought his father a book.

(123) ?John hastily bought and Bill cooked some food.

(124) Hans kaufte und Bill verspeiste den Aal.
"Hans bought and Bill ate the eel."

(125) ?Hans kaufte seiner Mutter und Fritz kaufte seinem Vater ein Klavier.
"Hans bought his mother and Fritz bought his father a piano."

(126) ?Hans kaufte gestern vormittag und Fritz las gestern nachmittag die Zeitung.
"Hans bought yesterday morning and Fritz read yesterday afternoon the nespaper"
'Yesterday morning Hans bought and yesterday afternoon Fritz read the newspaper.'

Given the questionable status of some of the above sentences, we can say that ENGLISH and GERMAN sometimes allow the scope of the verb to reach into the highest S, but that the acceptability of these sentences decreases with the number of constituents that intervene between the verbs and the raised object.

The assumption that in languages like CHINESE and BENGALI the scope of a verb is restricted by the VP that dominates it also accounts for the fact that these languages do not allow the deletion of verbs under certain conditions.

(127) a. Yohàn mǎi-le yì běn shu, Bill mǎi-le yì chang ch'àng-pièn.
"John bought one clas. book, Bill bought one clas. record"
'John bought a book, and Bill bought a record.'

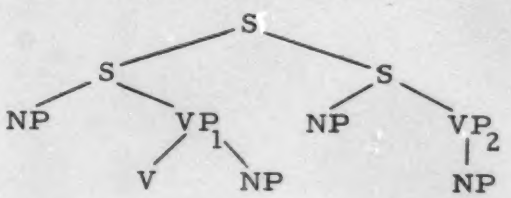
b. *Yohàn mǎi-le yì běn shu, Bill yì chang ch'àng-pièn.
"John bought one clas. book, Bill one clas. record"
'John bought a book, and Bill a record.'

(128) a. Yohàn mǎi-le yì běn shu, Yohàn mǎi-le yì chang ch'àng-pien.
"John bought one clas. book, John bought one clas. record"
'John bought a book, and John bought a record.'

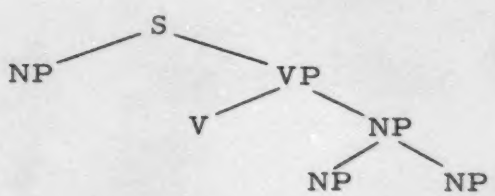
b. Yohàn mǎi-le yì běn shu gen yì chang ch'àng-pien.
"John bought one clas. book and one clas. record"
'John bought a book and a record.'

P-markers (129) and (130) below represent (127b.) and (128b.) respectively.

(129)



(130)



In (129) the scope of the verb in VP_1 has to extend into another S to range over the object nounphrase in VP_2. However, as we have seen earlier, CHINESE restricts the scope of the verb to the VP that dominates the verb, in this case to VP_1 and (129) can consequently not be a grammatical structure in CHINESE. In (130), on the other hand, the verb and the conjoined objects are dominated by the same VP and our hypothesis predicts that sentences with a structure like (130) are grammatical in MANDARIN CHINESE.

The above hypothesis that constraints on object deletion depend on the scope of the verb also predicts that a language like CHINESE or BENGALI, in which the scope of the verb is upward-bound by the VP node, will not have topicalization of the object as in (131) below.

(131) a. John bought the book.

b. The book John bought.

This seems to be true for CHINESE[34] and is definitely true for BENGALI, LEBANESE ARABIC and NAVAHO, i.e. precisely those languages where we would expect topicalization not to occur. Sanders and Tai accounted for the non-occurrence of object topicalization in languages like CHINESE and LEBANESE ARABIC by claiming that topicalization is a process of copying and deletion and not a movement transformation. Thus they can say that topicalization is ungrammatical in CHINESE because the copied object NP cannot delete the original under the conditions imposed by the IDC. The hypothesis presented in this paper, on the other hand, makes no claims about the steps involved in topicalization. All it says is that the topicalization of an object NP will be ungrammatical in languages in which the scope of the verb is upward-bounded by the VP. Topicalization will be ungrammatical because it 'moves' the object NP beyond the scope of the verb by placing it into S-initial position.

Another example which supports the hypothesis that language-specific constraints on deletion can be accounted for by assuming that the scope

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[34] For a discussion of some data on topicalization and especially of the CHINESE data see Sanders & Tai: 170-175.

boundaries of constituent types are language-specific are time-adverbs. While manner adverbs in both ENGLISH and CHINESE are upward-bounded by the constituent that immediately dominates the adverb, ENGLISH and CHINESE differ with respect to the upper boundary of time adverbs. It appears that in ENGLISH time adverbs can extend their scope beyond the constituent that immediately dominates the adverb, e.g. (132), while CHINESE time adverbs seem to have the same constraints as manner adverbs, e.g. (133).

(132) a. John saw his girl friend yesterday, and Mary saw her mother yesterday.

b. John saw his girl friend yesterday and Mary saw her mother.

c. Yesterday John saw his girl friend and Mary saw her mother.

(133) a. Yohàn tzuó-tien ti-le nán-hái-tze, Bill tzuó-tien dǎ-le nyǔ-hái-tze.
"John yesterday kicked boy, Bill yesterday hit girl"
'Yesterday John kicked the boy, and yesterday Bill hit the girl.'

b. *Yohàn tzuó-tien ti-le nán-hái-tze, Bill dǎ-le nyǔ-hái-tze.
"John yesterday kicked boy, Bill hit girl"
'John yesterday kicked the boy, and Bill hit the girl.'

c. Tzuó-tien Yohàn ti-le nán-hái-tze, Bill dǎ-le nyǔ-hái-tze.
"yesterday John kicked boy, Bill hit girl"
'Yesterday John kicked the boy, and Bill hit the girl.'

In (132b.) the adverb is immediately dominated by a VP, but it is not upward-bounded by this node as it can extend its scope into the VP of another coordinated sentence, i.e. (132b.) can be a paraphrase of (132a.). In CHINESE, however, (133b.) is not a possible reduction of (133a.), because (133b.) does not imply that 'Bill hit the girl yesterday.' On the other hand, if the adverb is dominated by the S node as in (133c.), it can extend its scope over both verbs and (133c.) can be a paraphrase of (133a.).

We have seen so far that the principle of scope seems to account for many of the constraints found in coordination reduction. However, we have not yet considered which of the two rules -- deletion or regrouping -- should be constrained. The most likely place appears to be the deletion rule which will be prevented from applying if regrouping cannot place the antecedent constituent into a position in which the scope constraints of a given language are met. Failure to place the antecedent constituent into an appropriate

position can either be due to the fact that regrouping cannot apply because the structural description of the rule is not met, or it can be due to the fact that regrouping would raise the antecedent constituent beyond the scope boundaries of the constituent(s) the former is in construction with. For example, one constraint on the deletion rule in ENGLISH as well as in GERMAN is that deletion of a direct object can only take place if the object is in verb-phrase-final position, a position which permits the reordering and raising of the object.

(134) a. John bought the book and Bill read the book.

b. John bought and Bill read the book.

(135) a. John bought the book for Christmas and Bill read the book.

b. *John bought the book for Christmas and Bill read.

RUSSIAN, on the other hand, does not have this constraint, as (136a.) can be reduced to (136b.).

(136) a. Vanja kupil jabloko, a Maša s"ela jabloko.
"Vanya bought apple, and Masha ate apple"
'Vanya bought an apple and Masha ate an apple.'

b. Vanja kupil jabloko a Maša s"ela.
"Vanya bought apple and Masha ate"
'Vanya bought and Masha ate the apple.'

Concluding this discussion of the hypothesis that constraints on coordination reduction depend on the scope of individual constituent types, we can say that even though many questions still remain unanswered, enough justification has been put forward in support of the above hypothesis that it merits further investigation.

3. Coordination reduction in disjunctions, questions etc.

Analyses like those proposed by Ross, Sanders, and Koutsoudas attempt to account for coordination reduction in conjoined affirmative declaratives, but they exclude coordination reduction involving disjunctive and adversative coordination, negated conjuncts, or coordination of other sentence types, e.g. of questions. Although no extensive research of the above types of

data was undertaken, all of the data investigated so far substantiates the hypotheses presented in this paper, i.e. all of the reduction patterns stay within the framework predicted by the deletion rule and the regrouping rule. In disjunctions and adversatives split coordination is more common than in and conjunctions. For example, in GERMAN (137a.) is a doubtful surface form, while (138a.) is perfectly acceptable because in (138a.) the meaning of und is adversative.

(137) a. ?Hans ist gekommen und Monika.
"Hans is come and Monika"
'Hans arrived and Monika.'

(138) a. Hans ist gekommen und nicht Monika.
"Hans is come and not Monika"
'Hans arrived and not Monika.'

(137a.) is doubtful because regrouping is obligatory in GERMAN for sentences like (137a.) unless und Monika has the meaning of an afterthought, while regrouping is optional for sentences like (138a.).

(137) b. Hans und Monika sind gekommen.
"Hans and Monika are come"
'Hans and Monika arrived.'

(138) b. Hans und nicht Monika ist gekommen.
"Hans and not Monika is come"
'Hans and not Monika arrived.'

Among the languages investigated split coordination in disjunctions occurs in BENGALI, HEBREW, ARABIC, RUSSIAN, HUNGARIAN, GERMAN, HINDI, HAUSA(?), and ENGLISH.

BENGALI:

(139) a. John ekta aapel kinlo kimba John ekta kola kinlo.
"John one apple bought or John one banana bought"
'John bought an apple or John bought a banana.'

b. John ekta aapel kinlo kimba ekta kola.
"John one apple bought or one banana"
'John bought one apple or one banana.'

c. John ekta aapel kimba ekta kola kinlo.
"John one apple or one banana bought"
'John bought an apple or a banana.'

CLASSICAL ARABIC:

(140) a. akala Faruk mousan au akala medhat mousan.
"ate Faruk banana or ate Medhat banana"
'Faruk ate a banana or Medhat ate a banana.'

b. akala Faruk mousan au Medhat.
"ate Faruk banana or Medhat"
'Faruk ate the banana or Medhat.'

An example of an adversary conjunction in which regrouping is optional are the GERMAN sondern 'but rather' constructions.

(141) a. Nicht Hans ist gestern angekommen sondern Klaus ist gestern angekommen.
"Not Hans is yesterday arrived but-rather Klaus is yesterday arrived"
'It isn't Hans who arrived yesterday but rather it is Klaus who arrived yesterday.'

b. Nicht Hans ist gestern angekommen sondern Klaus.
"Not Hans is yesterday arrived but-rather Klaus"
'It is not Hans who arrived yesterday but Klaus.'

c. Nicht Hans sondern Klaus ist gestern angekommen.
"Not Hans but-rather Klaus is yesterday arrived"
'It is not Hans but Klaus who arrived yesterday.'

Coordination reduction in negated conjuncts obeys the same principles as reduction in non-negated conjuncts though in some respects reduction involving negation is more restricted because of the presence of the negative particle. Below it is shown that all of the paraphrases of (142a.) can be generated if we assume the existence of rules (35) and (45).[35]

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[35] There are two other sentences which are closely related to (142a.). namely (1) and (2) below.

(1) John arrived but not Mary.

(2) John but not Mary arrived.

Whether or not (1) and (2) are paraphrases of (142a.) in that all three of these sentences are derived from the same underlying form cannot be decided here. It is very likely that (1) and (2), and possibly also (142a.) are derived from underlying clefted sentences. Such a derivation accounts for the position of not in (1) and (2). For a discussion of the derivation of the GERMAN counterparts of (1) and (2) see Harries, 1972.

(142) a. John arrived but Mary didn't arrive.

b. John arrived but Mary didn't.

c. John did but Mary didn't arrive.

d. *John but Mary didn't arrive.

Below are the respective derivations where the (i) forms are not claimed to be the underlying forms.

(142b') i. John past arrive but neg. Mary past arrive.

neg.-lowering

ii. John past arrive but Mary past neg. arrive.

deletion

iii. John past arrive but Mary past neg.

do-insertion and affix-movement

iv. John arrived but Mary didn't.

(142c') i. John past arrive but neg. Mary past arrive.

neg.-lowering

ii. John past arrive but Mary past neg. arrive.

deletion

iii. John past arrive but Mary past neg.

regrouping

iv. John past but Mary past neg. arrive.

do-insertion and affix-movement

v. John did but Mary didn't arrive.

Thus, while the rules will generate (142b.) and (142c.), they will not generate (142d.), as a form like (i) in (142b'.) or (142c'.) could only be converted into (142d.) if coordination reduction applied backwards, which is excluded in the present analysis.

Coordination reduction in conjoined questions is subject to the same constraints as coordination reduction in declaratives as the following data from ENGLISH and HUNGARIAN shows.

(143) a. Did John read a book or did John write a book?

deletion

b. Did John read a book or write?

regrouping

c. Did John read or write a book?

(144) a. Vett Bill banánokat és evett John banánokat?
"Bought Bill the banana and ate John the banana"
'Did Bill buy the banana and did John eat the banana?'

deletion

b. Vett Bill banánokat és evett John?
"Bought Bill the banana and ate John"
'Did Bill buy and John eat the banana?'

regrouping

c. Vett Bill és evett John banánokat?
"Bought Bill and ate John the banana"
'Did Bill buy and John eat the banana?'

In HUNGARIAN regrouping is not only optional in most declaratives but also in questions and both (144b.) and (144c.) are grammatical surface orders, while regrouping is obligatory in ENGLISH, i.e. (143b.) is not an acceptable surface order.

4. Conclusion

Concluding we can say that it has been shown in this paper that the analyses of coordination reduction as proposed by Ross, Koutsoudas, and Sanders fail to account for the facts in a principled way. In order to generate all possible surface forms they have to take refuge to ad hoc measures like otherwise unmotivated movement rules and constraints. Special movement rules are needed in all those cases where coordination reduction can result in two alternate orders, and it was shown that these cases are far more numerous than Ross and Koutsoudas' writings indicate. Special constraints are required for languages like QUECHUA where the directionality relation predicts an order which does not occur, while an order that is not predicted does occur. In the treatment of coordination reduction presented in this paper, on the other hand, the above problems are avoided. By assuming a reduction rule that only operates forward and subsequent regrouping, all of the data can be accounted for in a very general and principled way. The rules proposed make strong predictions about the surface orders of reduced coordinate structures that can occur in natural languages. They predict that if a language allows alternate ordering for a given reduced structure, these fall into the two categories below.

(i) The order of the reduced structure is identical to the output order of the deletion rule.

(ii) The order of the reduced structure is identical to the output order of the regrouping rule.

It is those structures characterized in (ii) that are considered 'normal' or 'basic' in Ross' as well as in Sanders' and Koutsoudas' approaches, while structures that fall under (i) are problematic for them if they result in a split coordination.

The rules proposed here furthermore predict that if a language only allows one surface order for reduced sentences, these surface orders must either fall under (i) above -- no regrouping -- or under (ii) -- regrouping obligatory. As pointed out before, object-reduction in HINDI constitutes to my knowledge the only potential counterexample to the above predictions. The HINDI data can, however, be explained if we assume that HINDI is an underlying SVO language.

In the chapter on constraints it was argued that if we assume a universal principle of scope, i.e. if we assume that every constituent type has a certain scope which has a linear and a dominance dimension, and if we assume that these dimensions are language specific, then we can account for many of the constraints on deletion and for the differences that exist between languages. Deletion has to be prevented in all those cases where in a given language after coordination reduction the constituents would be in a linear and/or dominance configuration that does not have the same relational content as the input sentence to the coordination reduction process. In other words, deletion has to be prevented where neither the output order of the deletion rule nor the output order of the regrouping rule meet the scope constraints of a given language. The assumption that the scope of a given constituent type is language specific accounts for the differences between languages. Note, however, that the choices open to a language are rather restricted. For instance, we found three types of upper boundaries for the scope of a finite verb, namely the scope is either restricted by the node that immediately dominates the verb, by a VP node that dominates the verb, or by an S-node that dominates the verb. For an adverb, there seem to exist two choices, namely it is either

upward-bounded by the node that immediately dominates it, or by an S node that dominates it. In ENGLISH manner adverbs belong to the first category, while time adverbs belong to the second. In CHINESE both adverb types belong to the first category, while in RUSSIAN both seem to belong to the second category. The choices open to other constituent types as well as the language specific constraints will have to be determined by further research.

Finally, in section 3. it was shown that the proposed treatment not only accounts for coordination reduction in and conjunctions but seems to account for all other kinds of coordination reductions as well. Whether or not it will also account for reductions in non-coordinate structures will have to be established by further research.

BIBLIOGRAPHY

Crockett, D. 1972. More on coordination reduction. Papers from the Eighth Regional Meeting, Chicago Linguistic Society. 52-61.

Delisle, G. 1972. Universals and person pronouns in Southwestern Chippewa. Doctoral dissertation, University of Minnesota.

Hankamer, J. 1971. Constraints on deletion in syntax. Doctoral dissertation, Yale University.

Harries, H. 1972. Cleft sentences, questions, and presupposition sharing. Doctoral dissertation, University of Minnesota.

Jackendoff, R. 1971. Gapping and related rules. Linguistic Inquiry, 2.1. 21-35.

Koutsoudas, A. 1968. The A over A convention. Linguistics, 46. 11-20.

_____. 1971. Gapping, conjunction reduction, and coordinate deletion. Foundation of Language, 7.3. 337-386.

Lakoff, G. 1969. On derivational constraints. Papers from the Fifth Regional Meeting, Chicago Linguistic Society. 117-139.

_____. 1970. Global rules. Language, 46.3 627-640.

Langacker, R. 1969. On pronominalization and the chain of command. in Modern studies in English, ed. by Reibel and Schane. Englewood Cliffs, Prentice Hall. 160-186.

Postal, P. 1970. On coreferential complement subject deletion. Linguistic Inquiry, 1.4. 439-500.

Pulte, W. 1971. Gapping and word order in Quechua. Papers from the Seventh Regional Meeting, Chicago Linguistics Society. 193-197.

Ross, J. 1967a. Constraints on variables in syntax. Doctoral dissertation, M.I.T.

_____. 1967b. Gapping and the order of constituents (manuscript). Appeared in Actes du X^{e} Congrès Internationale de Linguistes, II, Bucarest, 1970.

Sanders, G. 1970. Invariant ordering. Mimeographed paper, Indiana University Linguistic Club.

Sanders, G. and J. Tai. 1972. Immediate dominance and identity deletion. Foundation of Language, 8.2. 161-197.

Tai, J. 1969. Coordination reduction. Doctoral dissertation, Indiana University.

_____. 1971. Identity deletion and regrouping in coordinate structure. Papers from the Seventh Regional Meeting, Chicago Linguistics Society. 264-274.